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TECHNICAL REPORT

Health and Health Care Among District of Columbia Youth

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Preface

This report summarizes findings from analyses of health and health care among children in the District of Columbia and identifies strategies for improvement. The study was funded by the Children's National Medical Center. The report should be of interest to policymakers in the District and surrounding local areas, as well as individuals and organizations concerned with issues related to the health of District youth. A profile of RAND Health, abstracts of its publications, and ordering information can be found at www.rand.org/health.

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Summary

S.1 Overview

This study provides an assessment of health and health care among the more than 100,000 youth residing in Washington, D.C. It is designed to lay a factual foundation for advocacy and policy decisions related to children's health in the District, as well as to help inform the allocation of community benefit resources by Children's National Medical Center (Children's National), a children's hospital in the District. The three goals of the study are as follows:

1. Describe the health status of District children and their use of health services, with particular attention to changes over time in health status and health care use, as well as differences by age, insurance status, and location within the city.
2. Assess environmental characteristics that may contribute to or buffer against poor health outcomes among children.
3. Consider implications for improving children's health in the District based on the evidence developed in (1) and (2).

Our analyses are based on a synthesis of information from prior research (such as vital statistic reports and studies of the school nursing and school mental health programs), original data analysis of existing survey and administrative data, and information gathered through focus groups with parents, adolescents, and health providers.

S.2 Key Findings

In what follows, we summarize key findings related to particular domains, including health insurance, access to health care, and specific health conditions.

Health Insurance

Most children in the District have health insurance. The rate of uninsurance in the District (an estimated 3.5 percent of children in 2007) is lower than the national rate of uninsurance among children (an estimated 9.1 percent, based on data from the National Survey of Children's Health). However, District parents and providers raised concerns about gaps in insurance coverage for children related to re-enrollment or recertification.

Access to Health Care

Despite the encouraging finding that most District children have health insurance and have a medical home (as reported by their parents), access to care among the pediatric population nonetheless appears to be limited in several problematic ways.

- First, parents in the District are more likely than parents nationwide to report having difficulty seeing a specialist (12 percent in D.C. versus 8 percent nationally).
- District parents, teens, and providers noted particular difficulty accessing dental and mental health care as well as developmental assessments.
- Ambulatory care–sensitive inpatient hospitalization (ACS-IP) rates, which are related to the availability and efficacy of primary care, *increased* among the youth population in the District between 2004 and 2007, suggesting a worsening trend in access to or quality of ambulatory care. The most notable increase was among children ages 0–4.
- Among publicly insured children specifically, rates of office-based health care use in the District appear to be well below national rates.
- Rates of hospital use among publicly insured children were substantial. For example, among nondisabled children in managed care, about 27 percent use the emergency department (ED) during a year and among disabled children in managed care, that figure was 42 percent. Further, a segment of the publicly insured youth population appears to use the ED heavily (more than 3–5 times per year), possibly as a primary source of care. Finally, inpatient readmission rates among publicly insured children show room for significant improvement.

Barriers to Health Care

Barriers to access to primary and specialty care in nonhospital settings are multiple and complex.

- At least some of the access problem lies in the availability of primary and specialty care providers.
 - In focus groups, District parents indicated that availability of appointments for primary care was a key factor limiting access.
 - Both parents and providers pointed to limited availability of off-hours (evening, weekend, early morning) ambulatory care.
 - With regard to specialty care, available data suggest that the distribution of pediatric specialists is uneven across locations throughout the city and is not correlated with children’s health care needs. A particular dearth appears to exist for pediatric mental health specialists east of the Anacostia River.
- Capacity is not the only factor limiting the accessibility of ambulatory care, however. In focus groups, District parents, teens, and providers noted several issues, including
 - a perceived lack of understanding among providers of cultural and neighborhood issues important to their health care
 - the developmental appropriateness of health services for adolescents
 - health care providers’ general approach to and communication style with adolescents

- limited availability of providers who speak languages other than English and/or of interpreters
- the inaccessibility of providers and challenges with existing services for transportation assistance
- the limited amount of health education and health promotion available in schools and community settings
- lack of a standard, uniform, and facile process for the authorization of specialty care referrals.

Priority Health Conditions and Health Behaviors

Particular health conditions and health behaviors warrant special attention because of their prevalence, importance to health, and/or the patterns of health care use associated with them.

- Asthma
 - Among children in Medicaid/Alliance managed care and fee for service (FFS) Medicaid, 8 and 5 percent of enrollees who use services, respectively, had asthma. Asthma was one of the top ten most prevalent qualifying conditions among children enrolled in Health Services for Children with Special Needs (HSCSN).
 - Children with asthma use substantial hospital-based services. For example, asthma contributed to between 11 and 16 percent of inpatient hospitalizations in 2007 among all District youth ages 0–13, and asthma was one of the most common conditions associated with ACS-IP hospitalizations among youth ages 0–17.
- Mental Health Conditions and Developmental Delays
 - A substantial fraction of children in the District experience mental health problems or developmental delays. For example, among children in HSCSN, nearly two-thirds of the qualifying diagnoses for HSCSN were mental health or developmental disorders; among children in Medicaid/Alliance managed care and FFS Medicaid, between 4 and 14 percent of enrollees, respectively, who used services have a mental health disorder or developmental delay. Mental health conditions contributed to 13–14 percent of inpatient stays among those ages 5–17.
 - These disorders are a substantial contributor to hospitalizations among youth. For example, mental illness was a factor in between 3 and 5 percent of ED visits among older youth and young adults. Episodic mood disorders, in particular, were associated with a substantial fraction (between 8 and 10 percent) of inpatient hospitalizations among District youth ages 5–17. In addition, among managed care enrollees, the inpatient hospital readmission rate was higher in instances where the initial inpatient admission was related to a mental health issue.
 - Available evidence suggests many children with mental health disorders are not receiving adequate nonhospital behavioral health care. For example, one-third of children with episodic mood disorder in HSCSN did not appear to have a mental health visit (home or office based) during the year. The same was true for nearly three-fourths of children with an emotional disturbance, two-thirds of children with pervasive developmental disorders or adjustment disorders, and more than half of children with depressive disorder.

- HIV/AIDS
 - The District had the highest rate of newly reported cases of AIDS in the country. Among children under age 13, 86 percent of new HIV cases progressed to AIDS within one year. Sixty percent of cases among those ages 13–19 years progressed to AIDS within one year of diagnosis.
- Sickle Cell Anemia
 - District children with sickle cell anemia had high hospitalization rates. For example, more than three-fourths of children with sickle cell anemia enrolled in HSCSN had at least one ED visit during the year (although not all ED visits were necessarily related to sickle cell anemia). Further, nearly 30 percent of HSCSN enrollees with sickle cell anemia were heavy ED users. More than half had at least one inpatient stay and 19 percent had three or more inpatient stays (though hospitalizations could have been for issues unrelated to the sickle cell anemia).
- Obesity/Overweight
 - Rates of obesity/overweight among children are high and have been rising across the United States, and the District is no exception. Among youth ages 6–12 in the District, 19 percent are reportedly obese, and an additional 15 percent are overweight. Similarly, 15 percent of District youth ages 13–17 are obese, and an additional 15 percent are overweight. Some data suggest that overweight and obesity are even *more* of an issue in the District than nationally: A greater percentage of youth in grades 9–12 are reportedly obese in the District (18 percent) compared to the nation (13 percent).
- Sexual and Reproductive Health
 - Teen pregnancy rates decreased steadily in the District between 2002 and 2007; however, recent reports indicate that these numbers are increasing again.
 - The percentage of District youth reporting sex before age 13 (13 percent) was nearly double the national rate (7 percent).
 - Rates of chlamydia and gonorrhea infection were nearly three times the national average.
- Substance Use and Abuse
 - An encouraging finding is that use of cigarettes and alcohol is less common among District youth than in youth nationally. Among District youth in grades 9–12, 11 percent report currently smoking, compared to 20 percent of youth nationally. The prevalence of binge drinking was 12 percent (in the last 30 days) among District youth, compared to 26 percent nationally.
 - However, rates of illicit drug use in the District were higher than those in the United States as a whole for heroin and illegal injection drugs. In 2007, 5 percent of District teens reported using heroin and just under 6 percent reported using injection drugs (versus 2 percent nationally for each).

Socioeconomic Environment, Safety, and Violence

- Though the rate of children in poverty has declined in recent years (from 27 percent to 23 percent between 2003 and 2007), the percentage of children who live in poverty in the District is still higher than it is nationally (23 percent versus 18 percent).
- Safety and violence are particularly important issues facing District youth.
 - The rate of dating violence in the District increased from 11 percent to 17 percent from 2005 to 2007 and is significantly higher than the U.S. rate of 10 percent.
 - Fourteen percent of youth in the District reported feeling unsafe in school compared to 6 percent nationally.
 - Rates of child abuse and neglect are twice the national average; consequently, there are far more children in the foster care system in the District compared to the nation.

Variability in Pediatric Health, Health Care, and Health Environment Across the District

Substantial variability exists across the District in the environments in which District children live, which are likely to affect their health significantly. Health and health care outcomes also vary considerably for different locations within the District.

- Derived indices of the local health and socioeconomic status (SES) of District children suggest that several areas of the District may benefit most from interventions to improve the health environment. These include Columbia Heights, Mt. Pleasant, Pleasant Plains, Park View, Ivy City, Arboretum, Trinidad, Carver Langston, Near Southeast, Navy Yard, Historic Anacostia, Eastland Gardens, Kenilworth, Mayfair, Hillbrook, Mahanig Heights, Deanwood, Burrville, Grant Park, Lincoln Heights, Fairmont Heights, River Terrace, Benning, Greenway, Fort Dupont, Capitol View, Marshall Heights, Benning Heights, Woodland/Fort Stanton, Garfield Heights, Knox Hill, Sheridan, Barry Farm, Buena Vista, Douglass, Shipley Terrace, Congress Heights, Bellevue, and Washington Highlands.
- Specific issues for particular wards within the District also include the following:
 - Fewer children in Wards 1, 6, 7, and 8 reported exercising regularly.
 - Ward 8 had the highest rate of violence-related deaths in the District.
 - Children in Wards 7 and 8 were less likely to have a medical home compared to children residing in other areas of the city.
 - Children in Wards 1, 2, and 3 were less likely to have a preventive dental visit than District children residing in other areas of the city.
 - The rate of having problems with seeing specialists was substantially greater among children in Ward 7 (31 percent).
 - Among youth 0–4, ACS rates (ED and IP) were highest in Public Use Microdata Area (PUMA) B, which contains most of Ward 4 and parts of Wards 1 and 5; ACS-IP rates increased substantially in PUMA D, which contains Wards 7 and 8.
 - Among youth 5–13 and 14–17, ACS rates were highest in PUMA B (most of Ward 4 and parts of Wards 1 and 5) and PUMA E, constituting parts of Wards 1, 2, and 6.
 - Among those 18–24, ACS rates were highest and recently increased in PUMA D (Wards 7 and 8).

S.3 Implications for Advocacy and Policy

These findings suggest critical next steps for District policymakers, organizations, and individuals invested in improving child health. Key recommendations include the following:

1. **Continue the District's commitment to health insurance coverage.** While child insurance rates are commendable, insurance continuity was an issue raised by parents and providers. In light of recent budget slowdowns, maintaining this coverage is essential.
2. **Implement strategies to increase children's access to and use of primary and specialty care.** Continuing to build primary care capacity includes increasing the network of providers through better and more expedient reimbursement, reimbursement for case managers, and such incentives as support for electronic health record implementation. Incentives to increase the specialty care supply include loan repayment for providers and strategies such as "e-referrals" to reduce the need for specialty care appointments. The reported quality of services also limits the accessibility of ambulatory care. Issues such as a lack of provider respect could be addressed by performance-based accountability systems that regularly include client input on health care experiences and cultural competency trainings for providers.
3. **Focus interventions on children with particular health conditions.** Prevalent conditions among children using the majority of health services include asthma, mental health disorders, sickle cell anemia, HIV/AIDS, and obesity. These findings call for greater focus on early intervention. Expanding asthma management programs for children, improving the distribution of mental health providers, addressing the stigma related to mental health, and increasing healthy food options are important places to start. Further, it is essential to identify policies that will increase the availability of antiretroviral therapy in order to slow the quick progression of HIV to AIDS among pediatric populations.
4. **Implement strategies that emphasize prevention and wellness.** Data also suggest that the experience of and exposure to violence, general mental health, and sexual health issues continue to be problems for District youth. Comprehensive health education is a long overdue prevention investment. For example, the District needs more investment in emotional wellness programs; violence prevention programs that address school safety issues; and sexual health interventions that combine discussions of risky sex with life skills training.
5. **Target investments and interventions to children residing in particular areas within the District.** The variability of health and health care outcomes of children residing in different parts of the city suggests that targeting interventions based on location may be an efficient and effective way to reach the children most in need. Consider the benefits of place-based interventions or wellness zone models that emphasize multilevel, cross-sector intervention.
6. **Increase efforts to continuously and more comprehensively monitor children's health.** Ongoing monitoring of children's health and health care access is crucial to identifying emerging health issues, evaluating the effect of policy or local changes, and ensuring

appropriate and timely response to identified needs. More data on health care capacity and environmental health risks, annual or biennial assessment of child health, and routine analysis of administrative data are needed. Consideration of youth not reflected in current surveys should be addressed.

7. **Improve pediatric health through investments outside the health care delivery system.** Investments in education, housing, neighborhood safety, the natural environment, and the like must be viewed as additional if not equally critical levers for improving children's health.

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Introduction

1.1 Overview

This study assesses health and health care among the more than 100,000 youth residing in Washington, D.C., and is intended to lay a factual foundation for policy decisions related to children's health in the District, as well as to inform the allocation of community benefit resources by Children's National Medical Center (Children's National), a children's hospital in the District. The analysis has three objectives:

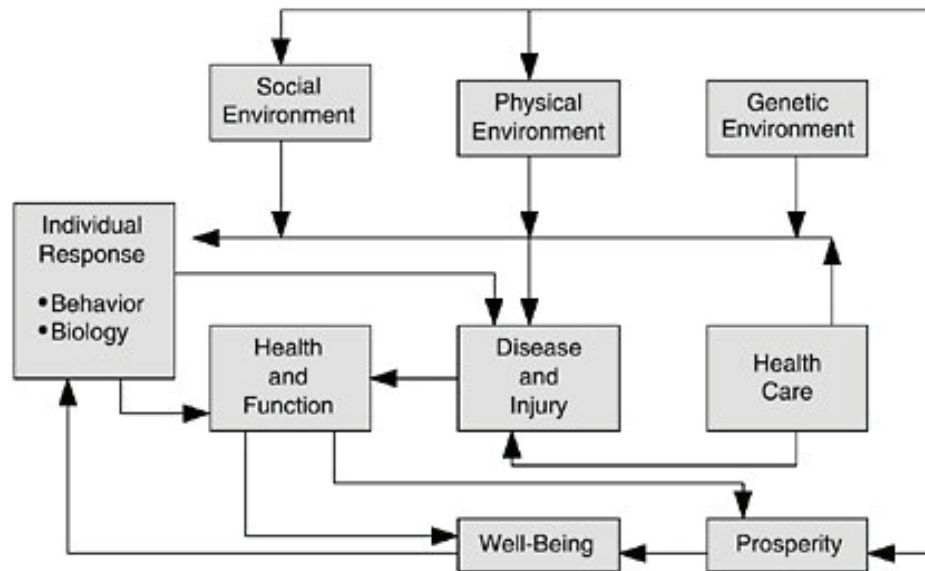
1. Describe the health status of District children and their use of health services, with particular attention to changes over time in health status and health care use, as well as differences by age, insurance status, and location within the city.
2. Assess the environmental characteristics that may contribute to or buffer poor health outcomes among children.
3. Consider implications for improving children's health in the District based on this assessment.

1.2 Conceptual Focus

Conceptual models such as the multiple determinants of health (Evans and Stoddart, 1990), child survival (Mosley and Chen, 1984), and the ecological framework (Bronfenbrenner, 1979) identify various factors that may explain why some children are healthier than others.

As shown in Figure 1.1, this framework acknowledges that the availability and quality of health services is only one factor among many that influence children's health. Other determinants of child health include genetic history, family structure, and the local environment, which for children includes child care facilities, schools, community centers, churches, and homes. In this assessment, our goal is to understand health status (health and function, disease and injury) and access to health care among children (objective 1) and also to explore the physical and social environment in which District children live (objective 2). Our third objective is to consider strategies for improving children's health.

Figure 1.1
Conceptual Model of the Determinants of Health



SOURCE: Evans and Stoddart, 1990.

1.3 Approach

Finding appropriate data for a comprehensive assessment of child health needs and access to care in the District is a challenge, because we would like to be able to track both city-level health outcomes among children and outcomes at smaller geographic levels within the city, such as Public Use Microdata Areas (PUMAs), wards, census tracts, zip codes, or neighborhood clusters.¹ Both the size of the youth population and the sociodemographic characteristics of children vary across the city. However, many commonly used data sources on health are engineered to provide national-level or state-level estimates; nonsurvey data such as administrative data can sometimes be used to fill in information gaps, but these data are not always available; when they are, they must be thoroughly examined and “cleaned” prior to use. Further, while new surveys can be used to collect data on a specific locality, the process is resource-intensive, and there is often a significant lag between the time the data are collected and the time they are available for analysis.

Our study analyzes data from multiple sources, including existing survey data, administrative data, findings from previous studies, and new data collected through focus groups with parents, adolescents, and health providers in order to gain perspectives on child health issues and recommend areas of improvement. Table 1.2 describes these data sources.

In various analyses, we call attention to particular childhood health conditions. We selected these conditions on the basis of their prevalence and importance to health. We also chose conditions of policy interest as outlined by the Children’s National Community Needs

¹ PUMAs are geographic areas defined by the U.S. Census Bureau. Each PUMA contains approximately 100,000 people. There are five PUMAs in the District. Wards are well-known political catchment areas in the District. There are eight wards. Appendix A contains a map of District wards and PUMAs.

Table 1.2
Data Sources

Data Source	Time Period	Description
Vital statistics	2005–2008	We gathered data on child mortality from the Child Fatality Review. We also included data from the D.C. Department of Health Vital Statistics on teen pregnancies and births.
Youth Risk Behavior Survey (YRBS)	1999–2007	We conducted analyses of youth-reported engagement in health risk-taking behaviors. Our sample included middle school and high school data from the YRBS; however, 2001 was not included in the high school data because data were unweighted for city characteristics.
National Survey of Children's Health (NSCH)	2003, 2007	The NSCH is part of the Centers for Disease Control (CDC) State and Local Area Integrated Telephone Survey (SLAITS) system. NSCH data are based on parental reports. We obtained special permission from the National Center for Health Statistics (NCHS) to develop ward-level estimates using a restricted file at the secure data center in Hyattsville, Maryland (Appendix B).
Claims data from three managed care organizations serving D.C. Medicaid and Alliance programs	2006	Three managed care organizations serving Medicaid and Alliance managed care enrollees in 2006 provided claims data. Enrollees were included if they were enrolled for at least six months during the one-year period. Enrollee information (age, gender, zip code of residence) was merged with utilization data, including date of health care use, diagnosis, and procedures.
D.C. Hospital Association (DCHA) inpatient discharge data	2000–2007	DCHA provided inpatient discharge information for every patient discharged from DCHA hospitals from 2000 to 2007. Data include diagnosis, date of service, procedure codes, patient age, patient zip code, and payer status. Hospital identifiers are available from 2004 to 2007.
DCHA ED discharge data	2004–2007	DCHA provided information about all ED discharges, including diagnosis, date of service, hospital identifier, procedure codes, patient age, patient zip code, and payer status
Claims data for fee-for-service (FFS) Medicaid enrollees	2007	The D.C. Department of Health Care Finance (DHCF) provided claims data for youth FFS Medicaid enrollees who used services during 2007. Nonusers were not included. The data contain basic demographic information as well as information on enrollment, use of care, diagnoses associated with use, and procedures.
Claims data for pediatric patients at Children's National hospital and Children's National outpatient sites	2007–2008	Children's National provided claims data for youth who used Children's National services during a one-year period between 2007 and 2008. The data include location of care, procedure codes, diagnosis codes, and basic patient demographic information (see Appendix C).
Claims data for children enrolled in HSCSN	2007–2008	HSCSN provided claims data for children enrolled at least six months over a two-year period spanning 2007–2008. The data include procedure codes, diagnoses, qualifying diagnosis (for SSI), and basic patient demographic information.
Environmental data	2000–2008	We obtained data from a variety of government agencies for our analysis of the environmental characteristics of neighborhoods. This includes the location of food establishments, the presence of recreational facilities, and the quality of housing. We describe these data sources in more detail in Chapter 3.
Focus groups with health care providers, parents, and adolescents	2009	Focus groups were conducted with eight parent groups, two teen groups, and seven provider groups (total participants = 130). The focus groups used a semistructured protocol, querying participants about priority child health issues, health service use challenges, and factors related to child health. A key component of the groups was eliciting concrete recommendations for improving child health in the District.

Assessment Advisory Group and the D.C. Child Health Action Plan, which was developed by the D.C. Department of Health in partnership with community organizations to provide a strategic vision and benchmarks of child health for the next three to five years. To the extent possible, we have considered each of the Action Plan's eight child health indicator areas in our analysis (obesity, asthma, substance abuse, lead exposure, well-child visits, infant mortality, sexual health, oral health), in order to provide data that may inform this vision moving forward.

Finally, to the extent that data are available, we focus on children up to age 21 for two reasons. First, we know that the transition to adult medical services can be difficult for youth and young adults in this age group. Second, Children's National serves this population. Not all data contain information on youth through this age. For example, the NSCH data include youth through age 18 and the YRBS surveys youth through Grade 12. Further, in order to analyze older youth using the DCHA data, we include individuals ages 18–24 because good population data are available only for this larger age group.

1.4 Organization of the Report

Our findings are organized into three sections and nine chapters, as follows. The first section (Chapters 2 and 3) sets the context for our assessment of children's health in the District. Chapter 2 profiles the health care delivery system for children in the District, and Chapter 3 describes the physical and social environment of District neighborhoods.

The second section, comprising five chapters, describes health and health care use among District children. Chapter 4 describes the health insurance, socioeconomic, and health characteristics of District children. Chapters 5–7 describe use of health care services among District children: Chapter 5 describes use of hospital-based care among all District children, Chapter 6 profiles health care use among children who are publicly insured (Medicaid/Alliance managed care or fee-for-service Medicaid), and Chapter 7 describes health care use among children with special health care needs. Chapter 8 summarizes residents' and providers' perceptions of barriers to better health and better health care among children in the District and describes their ideas for improving children's health. Chapter 9 concludes with recommendations.

Section I

Setting the Context

Infrastructure of the Health Care Delivery System for Children in the District

In this chapter, we describe key components of the health care delivery system serving District youth. First, we describe the hospital infrastructure and the extent to which children use various hospitals for various types of care (Section 2.1). We then describe pediatric providers licensed to provide care in the District, including both primary care providers and specialists (Section 2.2). We also describe the location of community health centers and children's health clinics (Section 2.3) and dental providers (Section 2.4). Section 2.5 profiles school-based services. We briefly summarize how health services are provided to youth in foster care in Section 2.6.

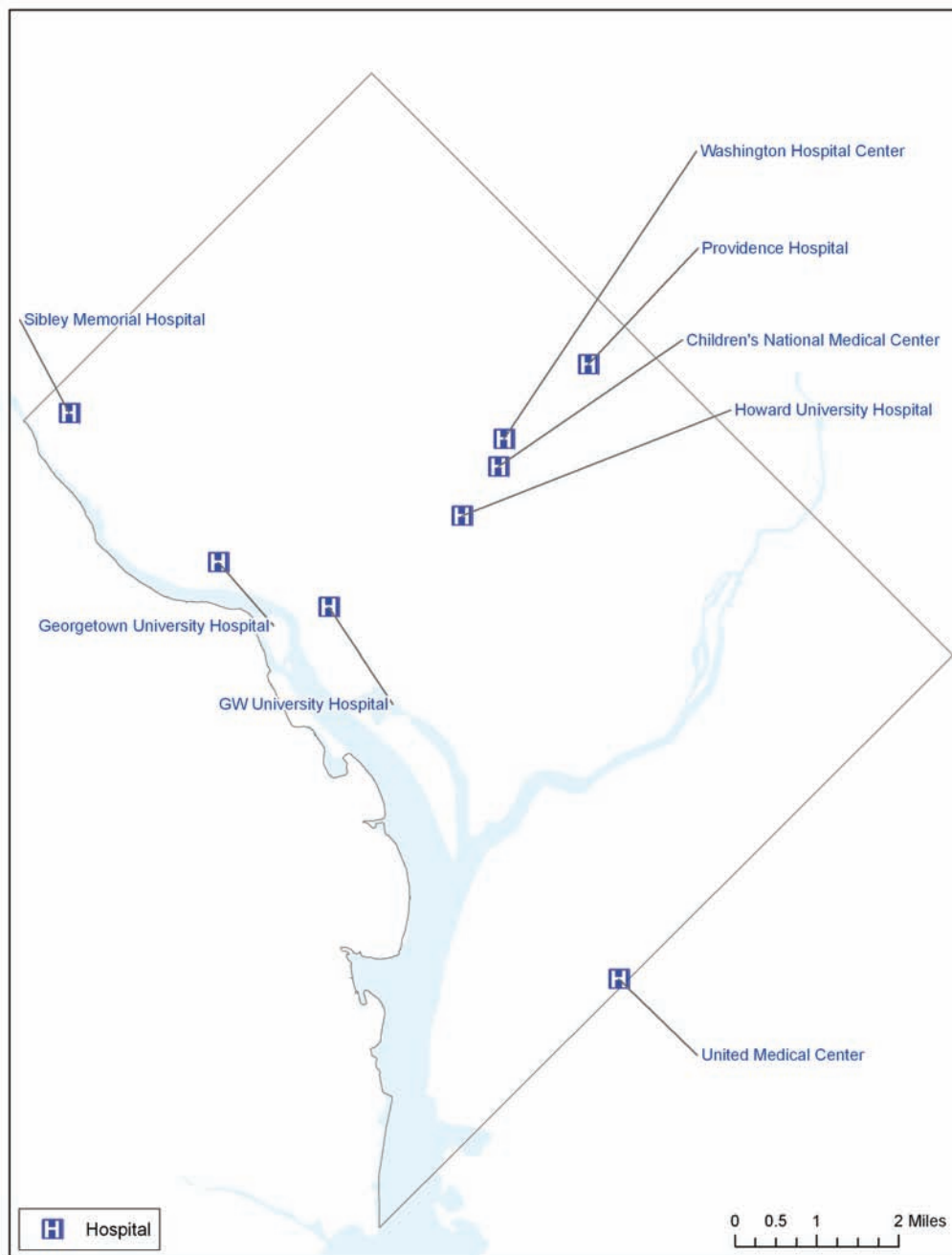
2.1 Hospital-Based Services for District Youth

Eight nonfederal acute care hospitals in the District provide the bulk of hospital-based services to D.C. residents. A key hospital for youth is Children's National Medical Center. Figure 2.1 depicts the location of District hospitals.

In what follows, we describe the role of Children's National and other District hospitals in providing care to District children. We first describe how the provision of hospital services in the District varies for youth of different ages (Section 2.1.1), then for youth with different insurance coverage (Section 2.1.2), for youth from different parts of the city (Section 2.1.3), and for youth with different diagnoses (Section 2.1.4).¹

¹ We provide detailed analysis of use of Children's National hospital and nonhospital services by District youth in Appendix C.

Figure 2.1
District Hospitals



2.1.1 Hospitals District Children Use, by Age

We describe the percentage of inpatient stays and emergency department (ED) visits among youth that occur in each of the District hospitals, separating children by age group (Table 2.1).

Table 2.1
Distribution of Inpatient and ED Discharges Among District Youth, by Hospital

Ages 0–4	Inpatient				Emergency Department			
	2004	2005	2006	2007	2004	2005	2006	2007
<i>Total discharges</i>	<i>1,575</i>	<i>1,934</i>	<i>2,240</i>	<i>2,067</i>	<i>21,766</i>	<i>22,497</i>	<i>21,752</i>	<i>22,816</i>
Children's National	71.0	73.7	77.0	79.9	75.0	77.7	80.7	82.9
Georgetown	15.2	16.7	15.0	13.1	5.0	5.6	6.2	5.8
Howard	10.8	6.1	4.6	4.5	4.7	4.2	3.8	3.3
GWU	<1	<1	<1	<1	1.0	1.1	1.1	1.2
WHC	1.3	1.7	1.3	<1	2.8	2.2	<1	<1
Providence	<1	<1	<1	<1	1.7	1.6	1.3	1.2
UMC	<1	<1	<1	<1	8.5	6.6	5.8	4.5
Sibley	<1	<1	<1	<1	1.3	1.0	1.0	1.1
Ages 5–13								
<i>Total discharges</i>	<i>1,187</i>	<i>1,233</i>	<i>1,310</i>	<i>1,096</i>	<i>16,913</i>	<i>16,949</i>	<i>15,828</i>	<i>15,740</i>
Children's National	82.1	83.8	86.8	85.8	72.6	73.5	75.6	78.0
Georgetown	7.3	7.4	7.3	6.3	3.3	3.7	4.0	4.6
Howard	9.1	7.5	5.0	6.4	5.3	5.3	4.5	3.7
GWU	<1	<1	<1	<1	1.3	1.3	1.6	1.4
WHC	<1	<1	<1	<1	<1	<1	<1	<1
Providence	<1	<1	<1	<1	3.5	3.0	2.8	2.3
UMC	<1	<1	<1	<1	10.9	10.0	8.0	6.6
Sibley	<1	<1	<1	<1	2.8	2.9	3.2	3.1
Ages 14–17								
<i>Total discharges</i>	<i>1,161</i>	<i>1,310</i>	<i>1,322</i>	<i>1,271</i>	<i>8,682</i>	<i>9,289</i>	<i>9,492</i>	<i>9,506</i>
Children's National	45.7	48.6	46.1	42.6	56.3	59.1	59.9	60.1
Georgetown	4.6	4.6	5.3	5.9	3.0	3.2	3.9	3.8
Howard	15.0	15.1	12.5	13.0	9.4	8.6	7.1	7.5
GWU	3.3	2.6	1.8	3.2	3.6	2.8	3.5	4.0
WHC	21.6	17.7	22.7	25.3	5.2	5.7	6.6	6.1
Providence	4.3	4.3	5.9	6.3	6.4	5.5	5.9	5.4
UMC	4.0	5.3	4.0	2.9	12.4	11.2	9.7	9.5
Sibley	<1	1.1	<1	<1	3.8	3.9	3.4	3.6

Table 2.1 shows the following:

- For District youth ages 0–4, Children's National provides the majority of inpatient and emergency care.
 - In 2007, among youth ages 0–4, nearly 80 percent of inpatient discharges and 83 percent of ED discharges were from Children's National.
 - For youth ages 5–13, 86 percent of inpatient and 78 percent of ED discharges were from Children's National.
 - Among youth ages 14–17 in 2007, there was more dispersion of hospital use, with only 43 percent of inpatient discharges and 60 percent of ED discharges occurring at Children's National.

- Among youth ages 0–4 who received inpatient or ED care outside of Children’s National, the majority received care from Georgetown (accounting for 13 percent of inpatient visits and 5.8 percent of ED visits in this age group), Howard University (4.5 percent of inpatient visits and 3.3 percent of ED visits), and United Medical Center (UMC) (4.5 percent of ED visits).
- Among youth ages 5–13, Georgetown and Howard provided the most inpatient care after Children’s National in 2007, and UMC and Georgetown provided the most ED-based care (after Children’s National).
 - Just over 6 percent of inpatient discharges each occurred at Georgetown and Howard.
 - The second-highest percentage of ED discharges (after Children’s National) was from UMC, accounting for almost 7 percent of all ED discharges. Almost 5 percent of ED discharges were from Georgetown, and just over 3 percent of ED discharges were from Howard.
- For youth ages 14–17, 25 percent of inpatient discharges occurred from Washington Hospital Center (WHC), and 13 percent of inpatient discharges were from Howard. For this same group, just under 10 percent of ED discharges were from UMC, 8 percent were from Howard, and 6 percent were from WHC.

2.1.2 Hospitals District Children Use, by Payer

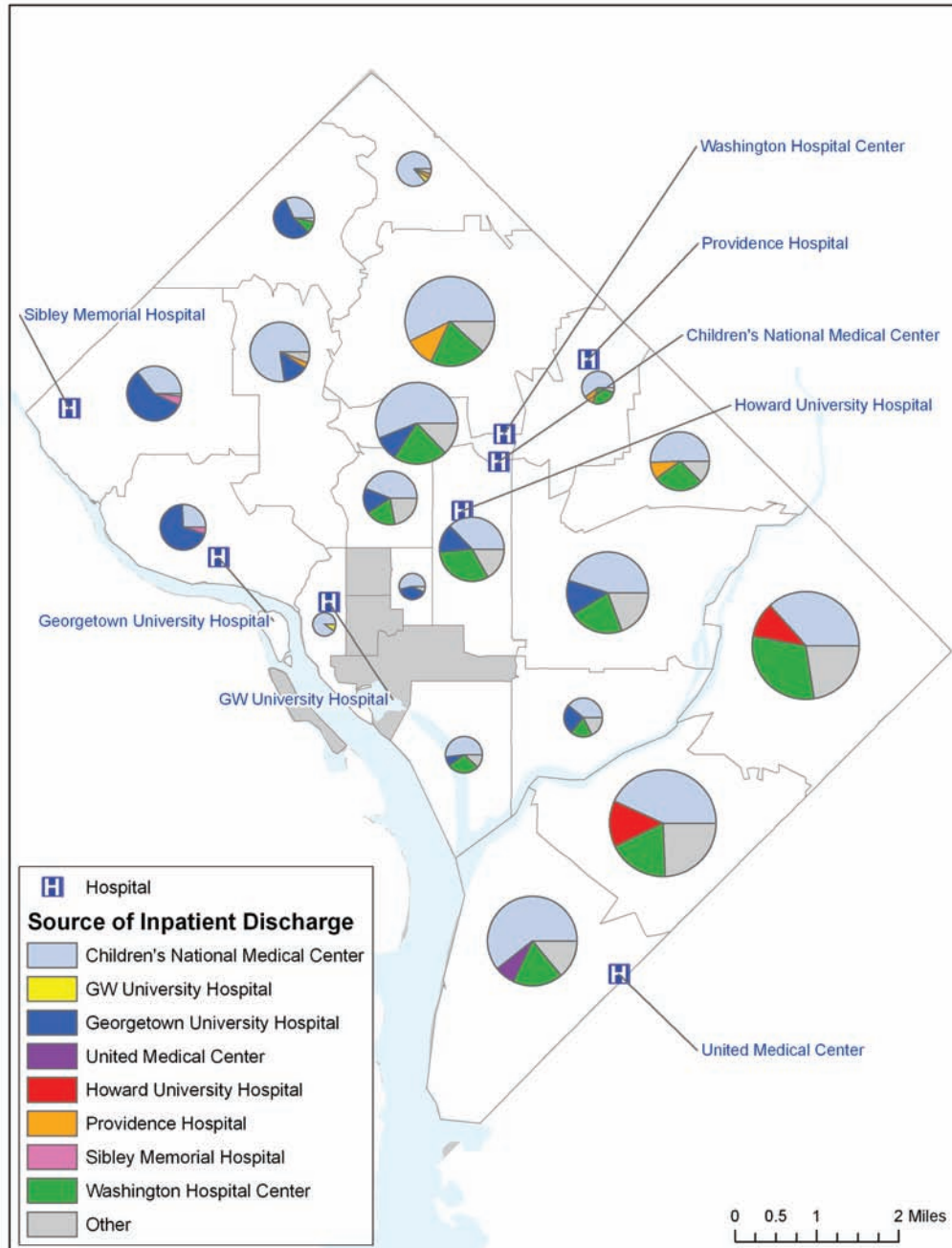
In addition to variability across youth of different ages in use of District hospitals, there is also significant variation in use of hospitals in the District based on payer status. For example:

- Eighty percent of inpatient visits to Children’s National among children ages 0–4 were paid for by Medicaid, as were 75 percent of inpatient visits among youth ages 5–13, and 75 percent of such visits among youth ages 14–17. The remaining visits were largely paid for by private insurers.
- By comparison, among inpatient hospital visits among children ages 0–4 at Georgetown, 91 percent were private pay, as were 88 percent of inpatient visits to Georgetown among youth ages 5–13, and 81 percent of inpatient visits among youth ages 14–17. Similarly, the vast majority (more than 90 percent among those ages 0–13) of ED visits to Georgetown were paid for by private payers.
- The payer mix at Howard (for visits among children) more closely mirrored that of Children’s National. Seventy-three percent of inpatient visits were paid for by Medicaid among youth ages 0–4, as were 61 percent of inpatient visits among youth ages 5–13, and 71 percent of such visits among those ages 14–17.
- Washington Hospital Center is a key provider of inpatient care for youth ages 14–17, with 58 percent of inpatient visits in this age range paid for by Medicaid.
- United Medical Center is a key provider of emergency medical care to youth across all age groups and serves primarily Medicaid patients (80–90 percent of UMC ED visits are paid for by Medicaid). Fifty-nine percent of ED visits among youth of all ages to Howard were paid for by Medicaid.

2.1.3 Hospitals District Children Use, by Location of Residence

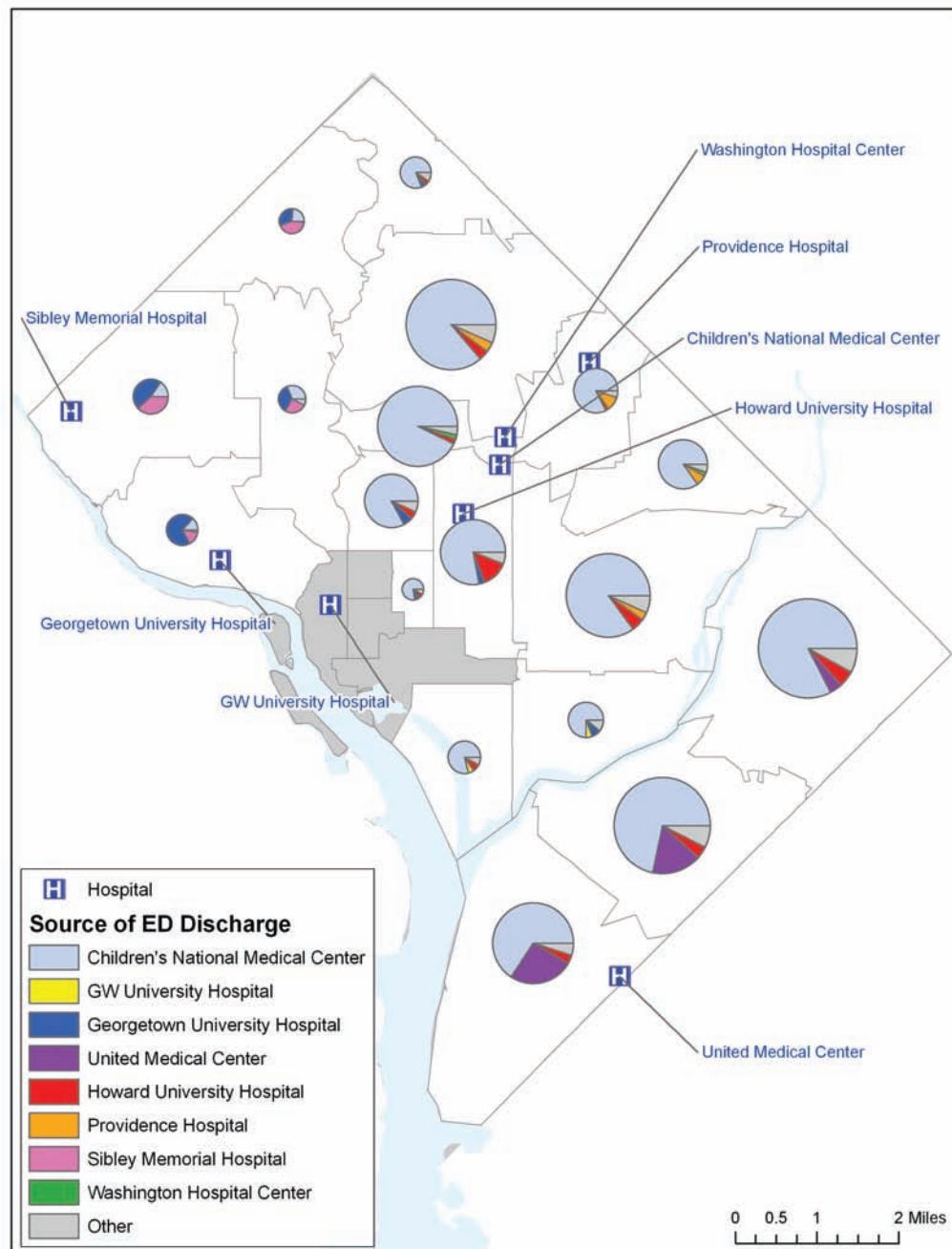
Figures 2.2 and 2.3 depict the three hospitals with the greatest share of all children's inpatient and emergency department discharges by patient zip code. Inpatient discharges include those for medical and surgical procedures and for obstetric deliveries.

Figure 2.2
Inpatient Hospital Discharges for Children, by Zip Code of Residence, Ages 0–17



NOTE: Excludes ED admissions that result in an inpatient admission.

Figure 2.3
Emergency Department Discharges for Children, by Zip Code, Ages 0–17



NOTE: Includes ED admissions that result in an inpatient admission.

Children's National is the most common source of inpatient discharges among all zip codes except the northwestern-most zip: 20015, 20016, and 20007 (which includes neighborhoods such as Chevy Chase, Palisades, and Georgetown). In these areas, Georgetown accounts for the highest percentage of inpatient discharges, followed by Children's National. These differences in hospital destination by zip code are likely also to explain the differences in the payer mix seen among hospitals. The northwestern zip, which have higher household incomes and

a higher percentage of insured individuals, account for the predominantly private-pay population seen at Georgetown.

In other zip codes in the city, after Children's National, Washington Hospital Center and Howard account for a significant portion of inpatient hospitalizations (Howard and UMC account for a significant proportion of inpatient discharges from zip code 20032). Again, the payer mix follows the zip code destinations. UMC, Howard, and Children's National tend to have higher percentages of discharges with Medicaid, reflecting the predominant insurance in these zip codes.

Emergency department discharges show a similar pattern. Again, Children's National is the most common source of ED discharges among all zip codes except the northwestern-most zips. In these areas, Georgetown and Sibley account for a significant portion of ED visits. In other areas of the city, after Children's National, those hospitals in close proximity to a given zip code tend to have the highest proportion of visits from that area. East of the river, this is UMC followed by Howard. On the other hand, Howard and Providence account for a significant proportion of visits in the zip codes around these areas.

2.1.4 Hospitals District Children Use, by Diagnosis

There are also differences in diagnoses by a given hospital. These differences are mainly driven by the youth population ages 14–17. Inpatient discharges from WHC and Howard among youth in this age range are most often pregnancy-related (mainly obstetrical deliveries), with 82 percent of WHC discharges and 29 percent of Howard discharges falling into this category. Inpatient and emergency department discharges for mental health diagnoses among this age group are more likely to occur from Children's National, rather than from Howard or WHC.

2.2 Primary and Specialty Care Pediatric Providers

Table 2.2 and Figures 2.4–2.7 show the distribution of pediatric providers across the city based on the D.C. Department of Health's Health Professional Licensing Administration (HPLA) database of providers.² A limitation of this source is that we have “counts” of providers but no information about full-time equivalent (FTE) supply or the type of insurance that providers accept (if any). We also do not know about the percentage of time each physician spends caring for persons who live in the District versus patients from other local surrounding areas. Consequently, the ratios of providers to the population estimated may be too high.³ We mapped the location of specialists within the city but did not calculate provider supply ratios because of the difficulty of determining the relevant subpopulation for comparison. (For many chronic condi-

² We used HPLA data and the 2008 Washington Physician's Directory to further classify providers by specialty. Our provider ratio is slightly lower than the ratio in the 2008 report *Assessing Health and Health Care for the District of Columbia* (Lurie, 2008) because, for the current study, many general pediatricians were reclassified as specialists using the Washington Physicians Directory. These maps show only office locations; in many cases, particularly for many of the medical subspecialties, one practice location may actually have multiple providers.

³ For a more detailed map of provider supply by FTE, see Teach (2006). In that study, the authors evaluated spatial accessibility of primary care for asthmatics with a detailed assessment of provider density that included physicians, nurse practitioners, and physician assistants. Based on their analysis, accessibility of primary care in the District ranged from 7.4 to 350.2 full-time pediatric providers per 100,000 children under than age 18 (based on a 40-hour work week serving children; nurse practitioners and physician assistants were counted as 0.75 FTEs).

tions, there is no clear distinction between what condition should be treated by a primary care physician and what should be treated by a specialist.)

2.2.1 Primary Care Provider Supply Compared to Benchmarks

Table 2.2 provides the provider supply rates for selected specialties. We present our data compared to three health maintenance organizations (HMOs), as well as to the Detroit metropolitan area. (These data were most readily available, and Detroit has comparable demographics to the District.) The comparison data present numbers of providers per 100,000 population; therefore, for consistency we also present our rates per 100,000 daytime population as our denominator (rather than per 100,000 children).

Compared to Detroit and the three HMOs (Kaiser, Group Health of Puget Sound, and Health Partners of Minnesota), the District has a higher number of general pediatricians: 25.3 per 100,000 population.⁴ However, when we also add family practitioners into the number of pediatric primary care providers, D.C.'s numbers are lower than those in the other sites, with a provider-to-patient ratio of 35.4 per 100,000 population.

The District has a similar number of pediatric medical specialists as Detroit (4.5 per 100,000 in D.C. and 4.4 per 100,000 in Detroit)⁵ and a higher number of child and adolescent psychiatry specialists, with 5.9 per 100,000 population compared to 2.3 per 100,000 in Detroit.

Table 2.2
Physician Providers per 100,000 Population for Washington, D.C., Three Health Maintenance Organizations, 2000–2002, and Detroit, 2004

Specialty	Washington, D.C. (a)	Kaiser (6 Sites Combined) (b)	Group Health Cooperative of Puget Sound (b)	Health Partners of Minnesota (b)	Detroit (2004) (c)
General pediatrics*	25.3	11.9	7.8	13.2	18.3
All pediatric primary care**	35.4	24.6	55.0	39.6	53.2
Pediatric medical subspecialties***	4.5	N/A	N/A	N/A	4.4
Psychiatry–children	5.9	N/A	N/A	N/A	2.3
All pediatric specialties	61.3	N/A	N/A	N/A	N/A

SOURCES: (a) Authors' analysis of the HPLA data cross-checked against the Washington Physicians Directory; (b) Weiner, 2004; (c) Forte and Armstrong, 2006. Numbers for HMOs are in FTEs.

* Pediatric primary care specialties exclude adolescent medicine for the Kaiser, Group Health, and Health Partners benchmarks. For Washington, D.C., we include pediatrics and adolescents in the general pediatrics figure.

** We created this number by adding family practice + general internal medicine for adult primary care and family practice + general pediatrics for pediatric primary care. This was done for comparison purposes to our D.C. data, discussed below. General Internal Medicine includes geriatrics for Detroit estimates.

*** To be consistent with Detroit subspecialties, this includes pediatric critical care, emergency medicine, neonatal intensive care, allergy/immunology, cardiology, endocrinology, pulmonary, gastroenterology, hematology/oncology, nephrology, rheumatology, and sports medicine. We included medicine/pediatrics as primary care whereas Detroit included this as a pediatric medicine specialty.

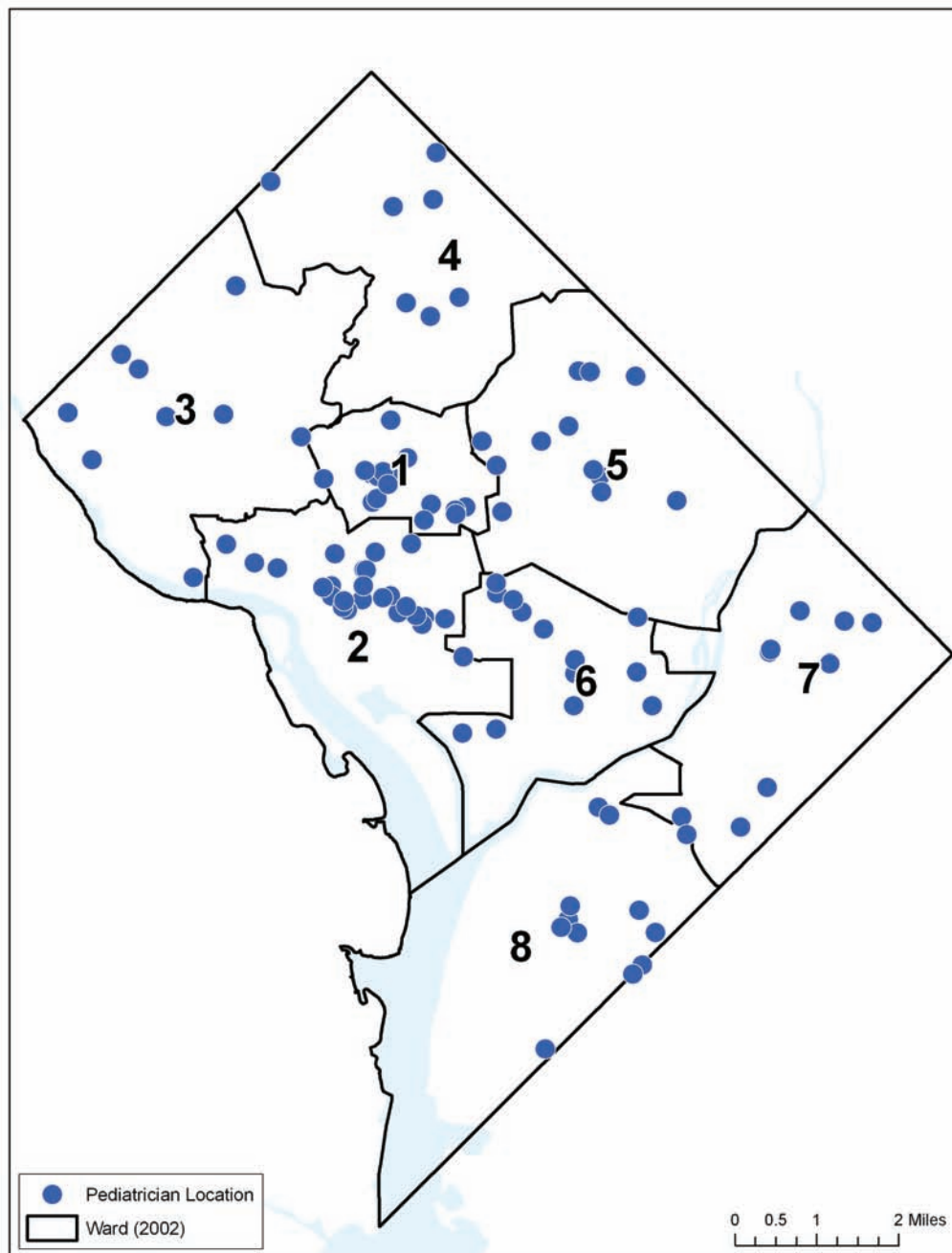
⁴ D.C. and Detroit numbers for general pediatrics include adolescent medicine. Kaiser, Group Health, and Health Partners do not include adolescent medicine in the general pediatrics numbers.

⁵ This includes pediatric critical care, emergency medicine, neonatal intensive care, allergy/immunology, cardiology, endocrinology, pulmonary, gastroenterology, hematology/oncology, nephrology, rheumatology, and sports medicine. We included medicine/pediatrics as primary care whereas Detroit included this as a pediatric medicine specialty.

2.2.2 Primary Care Provider Distribution in the District

Figure 2.4 shows a map of primary care provider practices (general pediatrics, adolescent medicine, and family practice). Primary care offices are distributed fairly well across the city with a cluster in the northwest part of the city, particularly in Ward 2.

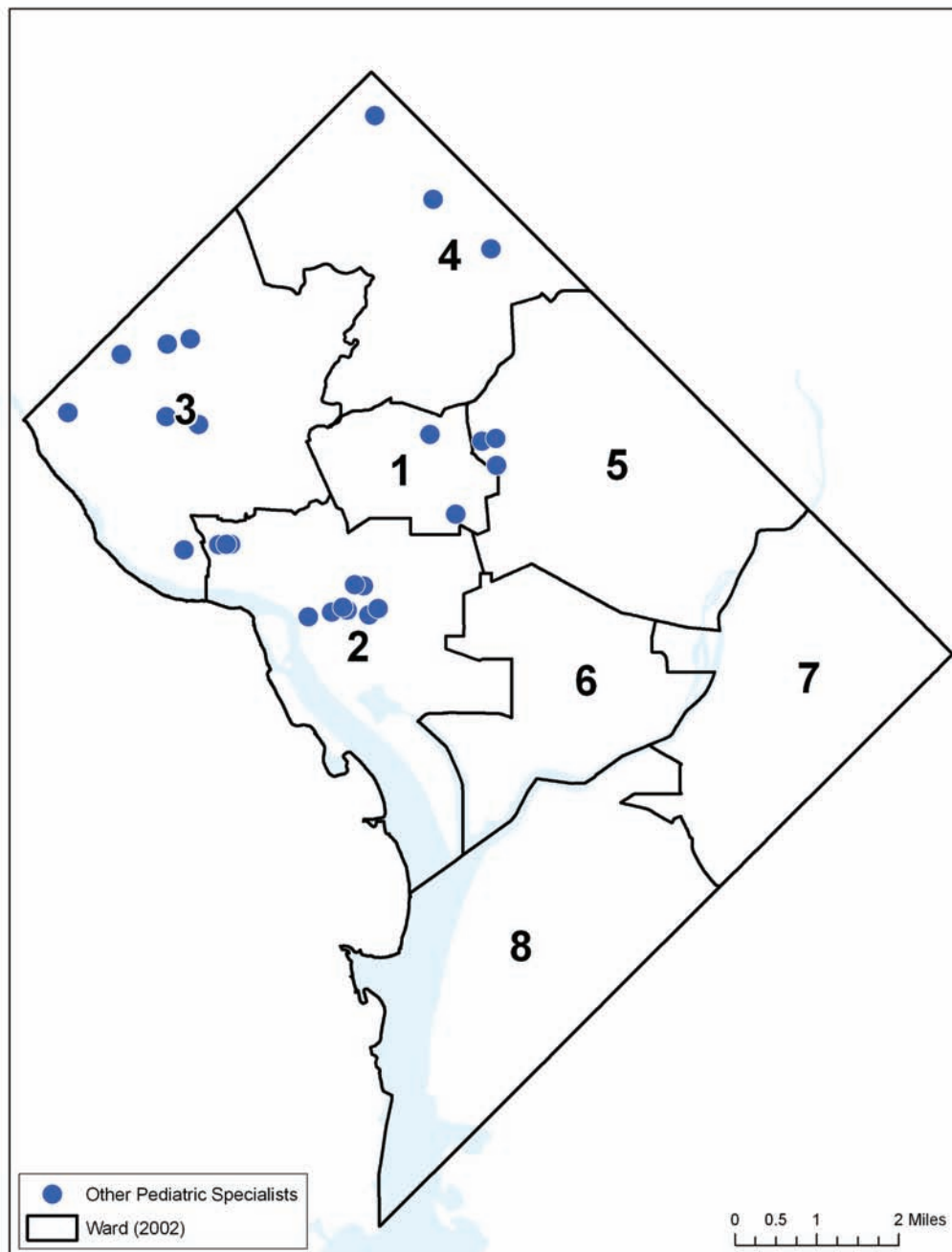
Figure 2.4
Location of General Pediatric, Adolescent Medicine, and Family Practice Providers



2.2.3 Pediatric Specialties

Pediatric specialties are less well distributed than general pediatrics. Although the ratio of pediatric medical specialists to the daytime population is consistent with the ratio in a demographically comparable city, such as Detroit, most specialists in the District are clustered in the northwest part of the city, particularly around Children's National and Georgetown (see Figure 2.5). Since some surgical and nonmedical specialties often serve both children and adults, those practices in which the provider did not report a pediatric subspecialty to the HPLA or to the Washington Physicians Directory may not be represented here.

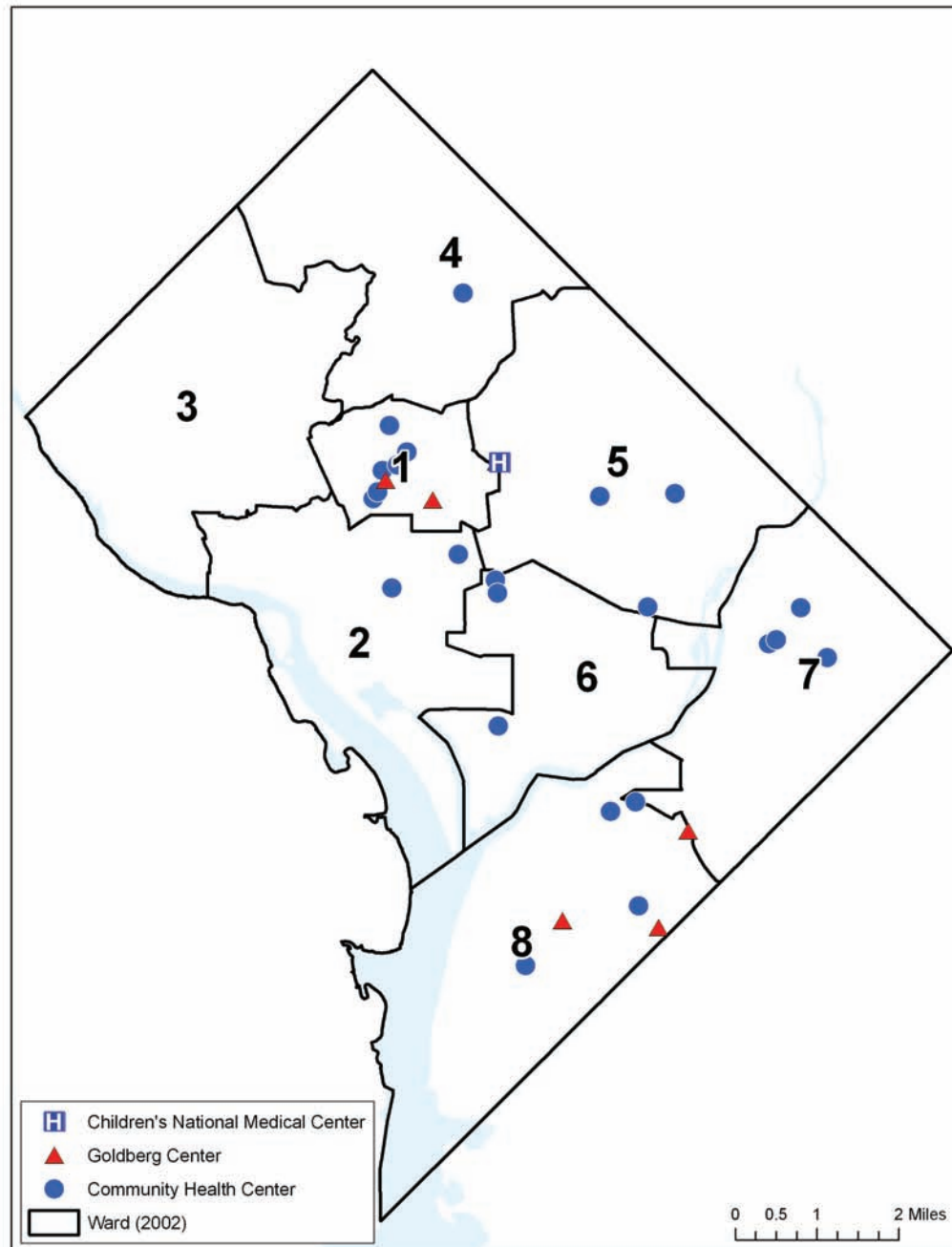
Figure 2.5
Location of Pediatric Specialists



2.3 Community Health Centers and Pediatric Clinics

Figure 2.6 shows the distribution of community health centers and pediatric clinics. The map includes seven clinics identified as “Goldberg Center” clinics, which are affiliated with Children’s National, as well as other community health centers (such as Unity clinics) not affiliated with Children’s National that provide services to children. The Goldberg Center clinics include the Adolescent Health Center and Children’s Health Center, both located at the Children’s National hospital site, as well as Children’s Health Centers on Martin Luther King Jr. Avenue,

Figure 2.6
Community Health Centers and Pediatric Clinics



in Adams Morgan, on Good Hope Road, at the Town Hall Education, Arts, and Recreation Campus (THEARC) and on 11th Street in NW (Shaw). Children's National also has several Regional Outpatient Centers (ROCs) not depicted here, as well as several physician groups in and around the District with which it is affiliated (also not shown). There are fewer health centers in the northwest part of the city, and none in Ward 3, presumably because more private providers serve this population.

2.4 Dental Provider Supply

Dental care is one of the most common areas of unmet need among American children. For children who are poor, dental care is even more problematic. A Kaiser study of dental care issues among Medicaid and SCHIP recipients identified a number of barriers to dental care for this population. These include a lack of available providers who are willing to accept Medicaid, as well as poor reimbursement rates and excess administrative barriers associated with Medicaid (Kaiser Commission on Medicaid and Uninsured, 2008).

Based on our interviews and focus groups, obtaining dental care is a particular problem for District children with Medicaid (see Chapter 8). While there is some school-based dental care available (discussed below), this care focuses on preventive screening rather than restorative care.

Although we do not have information delineating dental care providers who specifically focus on the pediatric population, we do present general data about the distribution and supply of dentists in the city (see Figure 2.7). There are approximately 67 dentists per 100,000 daytime population in the city (Lurie et al., 2008). Dental care is mainly concentrated west of the river, with fewer providers available in Wards 7 and 8. We do not have information about the types of insurance accepted by dental practices, so it is likely that this map provides an overrepresentation of the supply of dentists specifically for children with Medicaid.

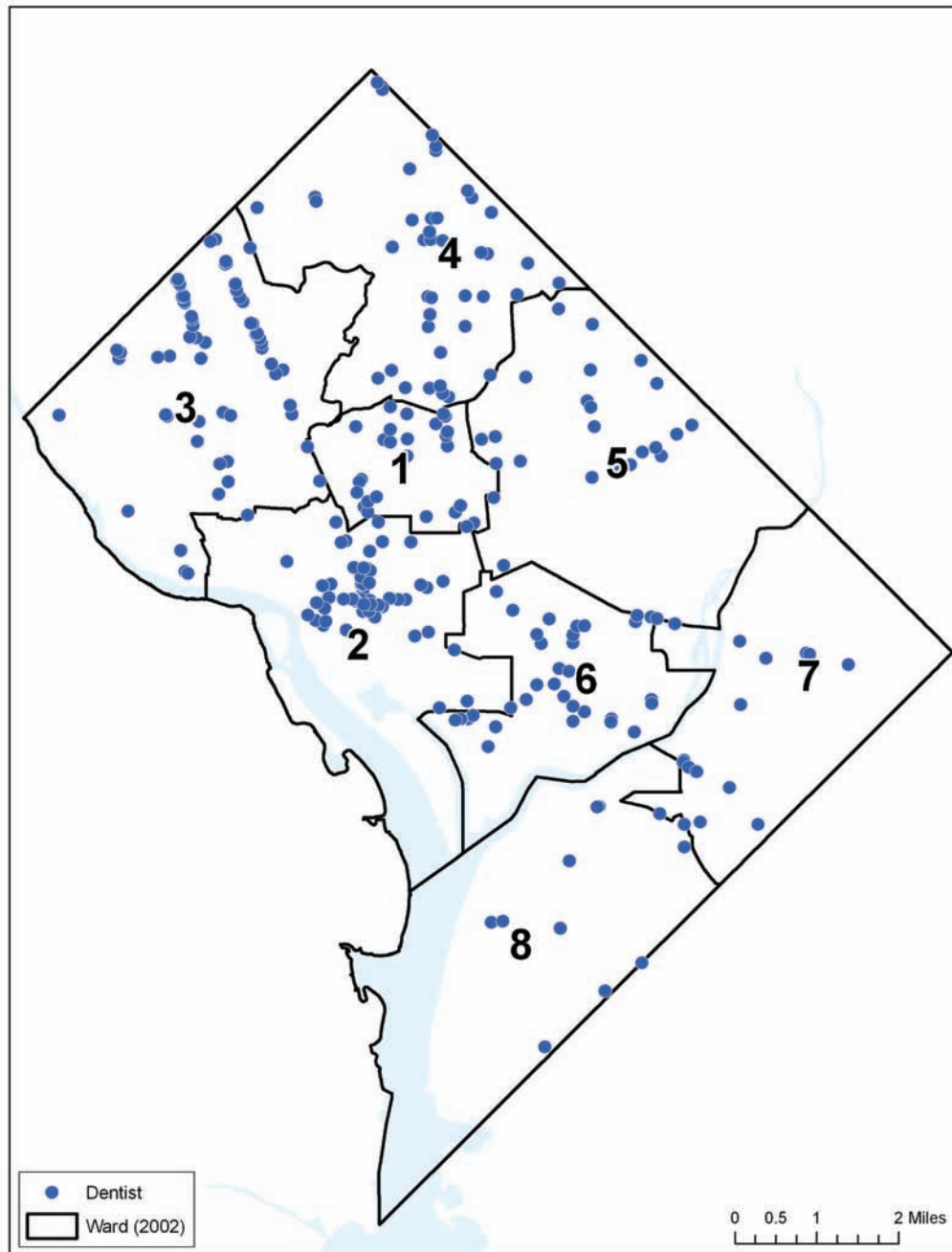
2.5 School-Based Health Services

Many preventive and acute health care services are provided to students in school. Health services provided in schools can address a key gap in children's health care by screening for health issues early and providing a convenient and accessible place for acute illness services, chronic disease management during school hours, and health education. There are three main efforts to provide school health services: the school nursing program, school-based health clinics, and the school mental health program. We describe each in more detail in the next sections.

2.5.1 School Nursing

The main component of the school health program in D.C. is the School Health Nursing Program (D.C. SHNP), which is a core program of the D.C. Department of Health (DOH). The mission of the D.C. SHNP is "to enhance education by maximizing the health and well-being of youth and to minimize and eliminate health-related barriers to learning." The program is currently under contract with the Children's National Medical Center under the auspices of its Children's School Services (CSS) office. Children's National assumed operational responsibility

Figure 2.7
Distribution of Dental Provider Locations in the District



for the program in 2001 under contract with the D.C. Department of Health's (DOH's) Child, Adolescent, and School Health Bureau.

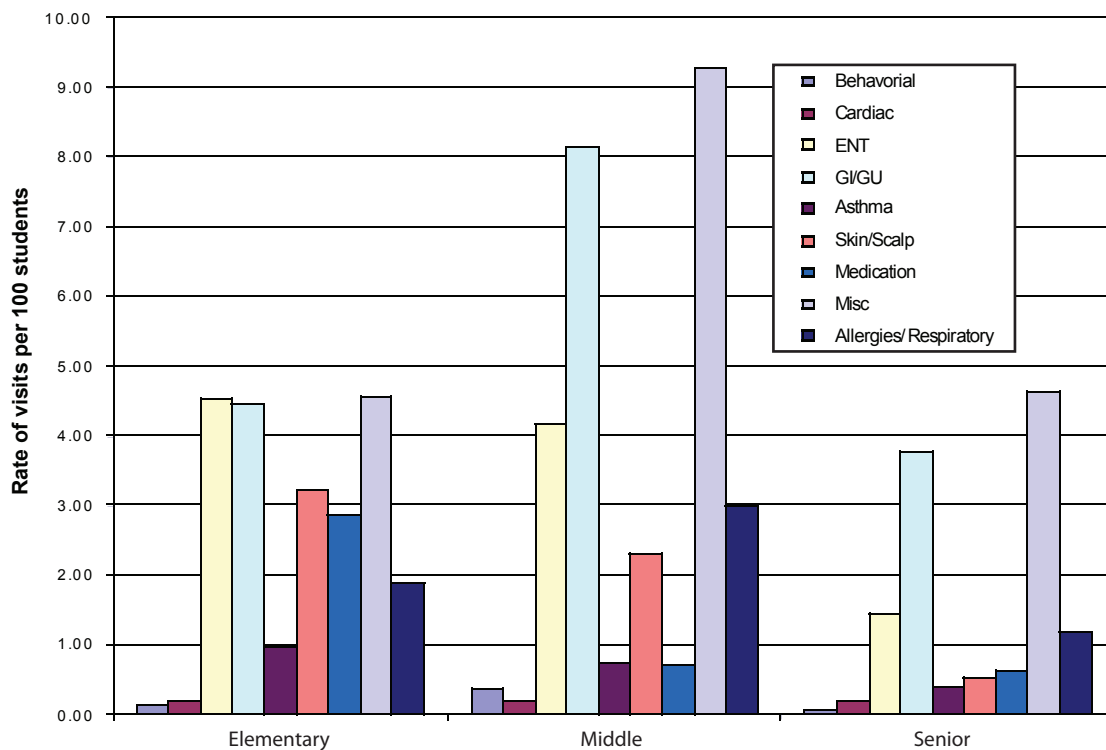
Currently, school nurses provide health services to students in D.C. public schools as part of the D.C. SHNP. Services provided by the school nurses include (1) assessment and care for acute illness or injury, health education and counseling, medication administration, and treatment for students with medical conditions; (2) hearing, vision, and scoliosis screenings and referrals; (3) immunization surveillance; (4) promotion of a healthy school environment; and

(5) liaison services between school staff, parents, and community health providers. Currently, there is a nurse in each D.C. public school (DCPS) for 40 hours (full time) per week; however, full-time coverage is not currently achieved in all D.C. public charter schools. However, there is an ongoing effort to increase coverage so that eventually all schools will have a full-time nurse.

According to an assessment of the school nursing program published in 2008 (Chandra et al., 2008), the ratio of students to nursing staff was approximately 1:263 elementary school students, 1:356 middle school students, and 1:778 high school students. The largest ratio of students to nurses was in Ward 3 (1:524 students), while ratios in other wards range from 1:218 (Ward 1) to 1:363 (Ward 6). In addition to the nurses placed in each school, there are nurse managers who are selected based on their seniority and nursing experience. They work out of the CSS central office and supervise nurses within the SHNP. Each nurse manager oversees approximately 40 schools and is responsible for such human resource activities as conducting performance reviews and running the program based on the guidelines set by the administrator.

The assessment also included an analysis of reasons for visiting the school nurse (using data from the 2006–2007 school year) (Figure 2.8). For elementary school students, common reasons for visits included ear, nose, and throat (ENT) difficulties (4.3 visits per 100 students); gastrointestinal (GI) or urinary (GU) difficulties (4.3), and skin issues (2.8). Middle school students reported far more GI/GU issues (8.0), and high school students presented with issues that were diverse and not categorized into existing groups on nurse reports (4.3).

Figure 2.8
School Nurse Visits by Reason and School Level, 2006–2007 School Year



2.5.2 School Health Centers

There are currently four school health centers in the District; however, there are efforts to develop two to four more health centers in the coming year. A school health center is

... any health center that is located on or near a school facility of a school district or board; is organized through school, community, and health provider relationships; is administered by a sponsoring facility and provides, at a minimum, comprehensive primary health services during school hours to children and adolescents by health professionals in accordance with state and local laws and regulations, established standards, and community practice (D.C. Assembly on School-Based Health Care).

Currently, there are two school-based health centers, one co-located health center, and one school-linked center. The two school-based health centers are at Eastern High School (Ward 6), operated by Unity Health Center, and at Woodson High School (or Fletcher Johnson while Woodson is under construction, Ward 7), operated by the DOH with oversight from Georgetown University. Both centers provide adolescent primary care services, acute care, HIV/AIDS services, and routine lab services. The Woodson Adolescent Wellness Center also offers oral health services. The center at Eastern High enrolls approximately 82 percent of the school (about 700 students), while Woodson enrolls approximately 63 percent of the school (about 535 students).

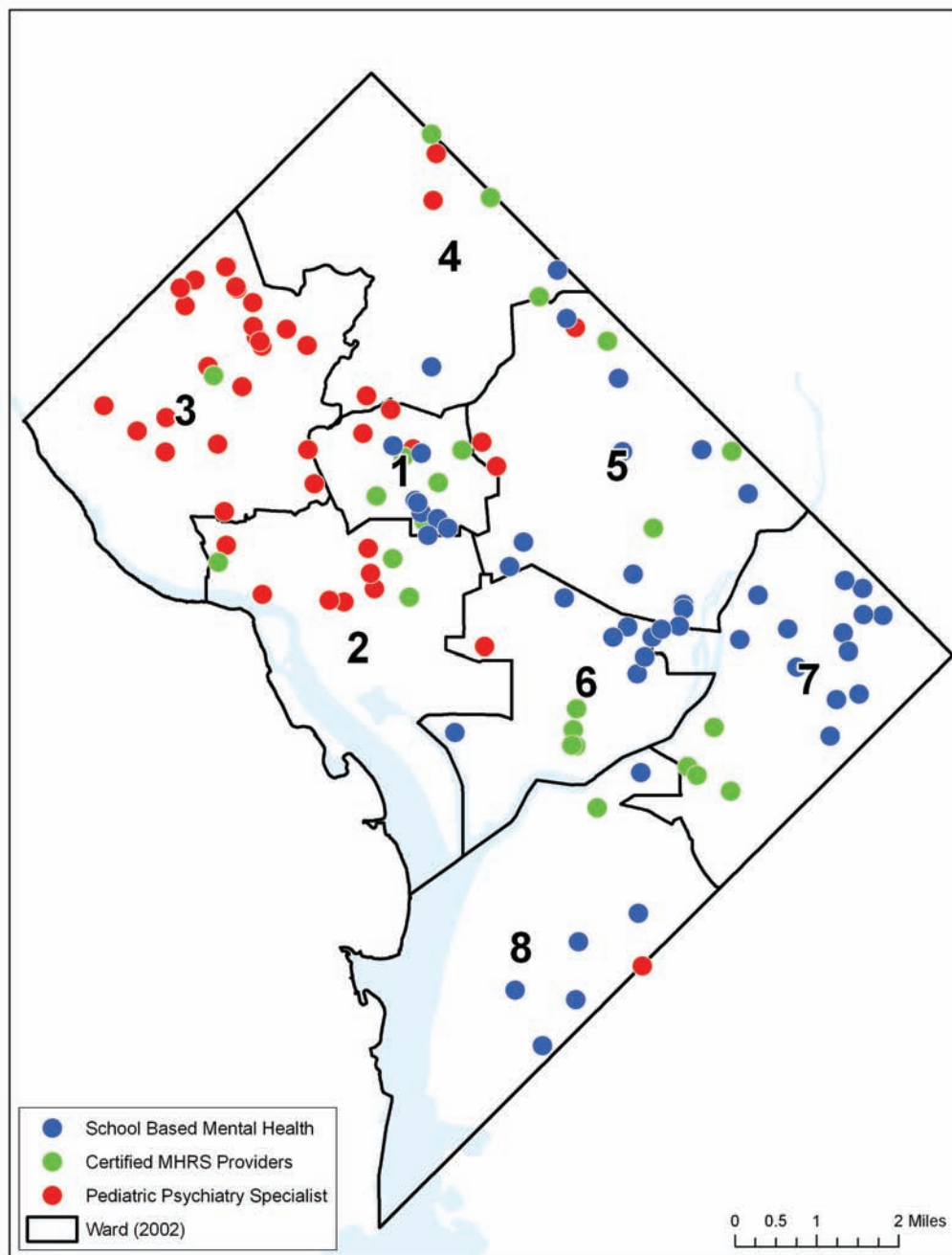
In addition to these school-based centers, Marie Reed Elementary School operates a health center co-located with Community of Hope Health Services in Ward 1. In addition, Kids Mobile Medical Clinic of Georgetown operates a mobile van for Anacostia High School (Ward 8) and Spingarn High School (Ward 5). The mobile van also provides adolescent primary care, acute care, routine lab work, and case management services.

2.5.3 School-Based Mental Health

Mental health was found to be problematic for many of the providers who participated in our focus groups and interviews (see Chapter 8). The DMH School Mental Health Program (SMHP) is modeled after the expanded school mental health framework (Weist, 1997). The SMHP employs licensed or license-eligible social workers, psychologists, or mental health specialists to provide prevention and intervention services to students (Price, 2008). Early intervention and treatment services are available to all students assessed as needing them. Figure 2.9 shows the distribution of school-based mental health providers. All schools do not currently have a school-based mental health provider from DMH, and fewer providers are located in Wards 3 and 4 compared to other wards in the city.

The school-based mental health program plays a large role in providing mental health services for children in the District; however, when intensive psychiatric intervention and medications are needed, resources for pediatric patients are often limited. Figure 2.9 also shows the distribution of these mental health providers in the city. Pediatric psychiatrists are mainly clustered west of the river, with only one pediatric psychiatrist located east of the Anacostia River (at UMC). School-based mental health centers do account for some of the supply issues with pediatric psychiatrists east of the river. In addition, DMH has a number of certified mental health rehabilitative service providers that deliver care to children and youth throughout the city. These community-based providers can provide care including diagnostic services, counseling, and medication services (D.C. Department of Mental Health).

Figure 2.9
Pediatric Psychiatrists and Mental Health Providers



2.6 Special Populations: Youth in Foster Care

As described in more detail in Chapter 4, the District has a higher rate of children living in foster settings as well as children awaiting adoption than the nation as a whole (20.7 per 1,000 in 2007 versus 6.9 per 1,000 nationally).

Children's National has a contract with the D.C. Child and Family Services Agency to run the D.C. KIDS Program, which affords medical services to children in foster care. The program provides medical screening examinations to children entering or leaving foster care and to children moving from one foster care placement to another. In addition, the program provides a comprehensive medical evaluation to children within 30 days of their entry into foster care. Prior to 2007, most screening examinations occurred in the Children's National emergency room or in one of its hospital-based primary care clinics. Since then, THEARC conducts most of the screening examinations and serves as a medical home for many of the children. In the last four years, 10,415 screening examinations were conducted (Table 2.3).

Table 2.3
Foster Care Preplacement Medical and Mental Health Screenings, 2005–2009 (%)

Location	May 2005 to April 2006	May 2006 to April 2007	May 2007 to April 2008	May 2008 to April 2009
Main hospital	53	59	0	0
Medical home	0	0	68	72
ED	47	41	32	28

NOTE: N = 10,415 screenings.

2.7 Summary

This chapter describes key components of the health care delivery system serving District youth. Key findings related to hospital-based care, office-based care, and school-based health care are summarized below.

Hospital-Based Health Care

- While eight nonfederal acute care hospitals exist in D.C., delivery of inpatient and ED hospital services to children is concentrated among just a few hospitals.
- Children's National is the predominant provider of inpatient and ED services to District youth.
 - More than 80 percent of inpatient discharges among District youth ages 0–13 are from Children's National, as are 43 percent of inpatient discharges among District youth ages 14–17.
 - More than three-fourths of ED visits among youth ages 0–13 are to Children's National, as are 60 percent of ED visits among those 14–17.
- Georgetown University Hospital, Howard University Hospital, and United Medical Center (UMC) are also key providers of inpatient and ED services to youth ages 0–13.
- For older youth, hospitals providing the majority of services (other than Children's National) include Washington Hospital Center (WHC), Howard, and UMC. Inpatient

discharges among youth ages 14–17 from WHC and Howard are most often pregnancy-related (mainly obstetrical deliveries).

- Children’s National is a central provider of hospital-based services to District youth enrolled in Medicaid; Howard University Hospital and United Medical Center also serve a youth population that is predominantly insured by Medicaid; Washington Hospital Center serves a mix of patients while Georgetown serves primarily privately insured youth.
- Children’s National is the most common source of inpatient discharges and ED visits among youths residing in all zip codes except the northwestern-most zips, such as 20015, 20016, and 20007 (which include neighborhoods such as Chevy Chase, Palisades, and Georgetown). In these areas, Georgetown and Sibley are the predominant providers of inpatient (Georgetown) and ED (Georgetown and Sibley) services.

Office-Based Health Care

- Measured against a number of benchmarks, the District has a relatively high number of general pediatricians (25.3 per 100,000 population) and comparable supply of pediatric medical specialists. However, District pediatricians likely serve a population that includes residents of Maryland and Virginia; thus, the effective supply of pediatricians is lower than estimated.
- The adequacy of the supply of pediatric providers (generalists and specialists) for District youth with particular types of insurance could not be measured.
- Pediatric specialists are not evenly distributed throughout the city; their presence is concentrated in the northwestern areas of the city. For example, pediatric psychiatrists are mainly clustered west of the Anacostia River, with only one pediatric psychiatrist located east of the river (at UMC).
- The District is home to a number of community health centers that provide office-based services to children, as well as seven Goldberg Center clinics affiliated with Children’s National.
- Dental provider locations are mainly concentrated west of the Anacostia River, with fewer providers available in Wards 7 and 8. We do not have information about the types of insurance accepted by dental practices, the availability of pediatric dentists, or the total number of dentists by practice or location.

School-Based Health Care

- The ratio of students to school nursing staff in the District is approximately 1:263 elementary school students; 1:356 middle school students; and 1:778 high school students. The largest ratio of students to nurses was in Ward 3 (1:524 students), while ratios in other wards range from 1:218 (Ward 1) to 1:363 (Ward 6). This is consistent with the National Association of School Nursing recommendations of one school nurse per 750 students; however, in schools with a high population of students having chronic illnesses or developmental disabilities, a ratio of one school nurse to 125 students may be necessary.
- There are two school-based health centers in the District (both at local high schools), one co-located health center (at an elementary school), and one school-linked center (a mobile

van serving two high schools). There are efforts in the coming year to develop two to four more health centers.

- The District's School Mental Health Program (SMHP) provides prevention and intervention services to students. Not all schools have a school-based mental health provider. Fewer school-based providers are located in Wards 3 and 4 than in other wards in the city; there are fewer pediatric psychiatrists east of the Anacostia River.

Physical and Social Characteristics of District of Columbia Neighborhoods

The characteristics of the areas in which people live carry important implications for health (see, for example, Diez-Roux, 2001; Morenoff and Lynch, 2004). Neighborhood characteristics that may affect health include such social conditions as the percentage of households living in poverty or average educational attainment and such environmental features as street design, park availability, and air quality. The relative contributions to health of social conditions and environmental factors are debated (Colgrove, 2002; Link and Phelan, 2002), but some hypothesize that social and environmental factors contribute more to health outcomes than the health care system itself (McGinnis and Foege, 1993; McGinnis, Williams-Russo, and Knickman, 2002; Mokdad et al., 2004).

In this chapter, we examine the physical and social profiles of District of Columbia neighborhoods, focusing on those characteristics most likely to affect residents' health. Appendix D provides a review of literature on which we drew to select the social and physical factors included in our analysis.

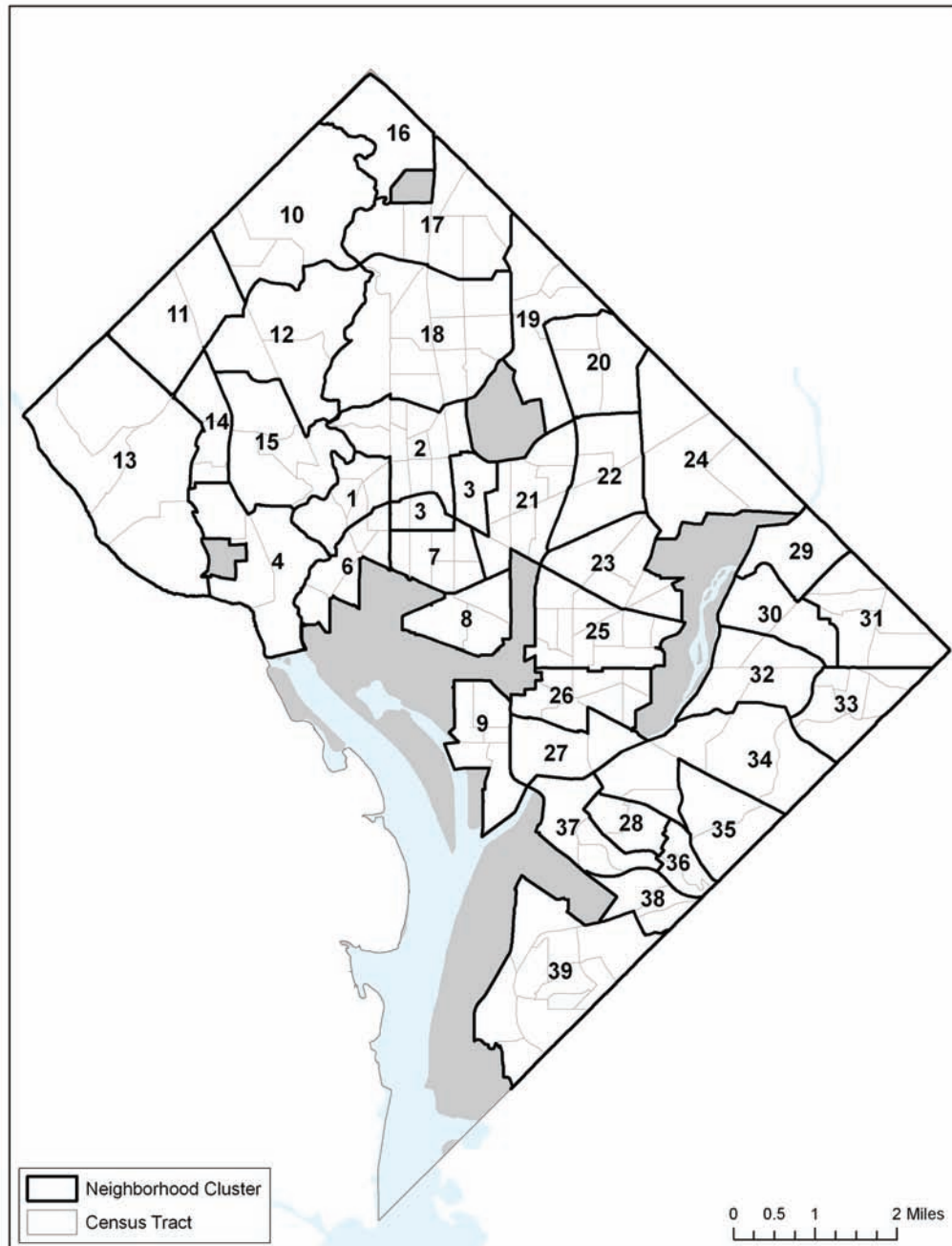
In developing measures of the social, environmental, and health care characteristics of District neighborhoods, our goal was to be as comprehensive as possible in terms of the range of domains addressed and to draw on data that could be relatively easily accessed, either from local government agencies or from such sources as the Census. We created measures at the census tract level and at the neighborhood level. Figure 3.1 depicts census tracts (defined by the light grey lines) and neighborhoods (numbered) within the District. Appendix A provides neighborhood cluster names.

A key challenge in this type of analysis is that individuals are likely to be influenced by the characteristics of their own census tract and of surrounding areas in which they may travel, work, or spend leisure time. We constructed our measures at both the tract and neighborhood level to address the potential for the environment close to but outside of tract boundaries to influence health outcomes.¹ However, more-sophisticated analyses would more directly model the influence of close-by areas, such as by determining the walking time to a local grocery store (measuring, for example, the percentage of people in an area who can walk to a supermarket within 15 minutes—see Graham, 2008) or by averaging the estimates of other local census tracts (usually in some distance-weighted manner) into the estimate of a particular tract (Gua-gliardo et al., 2004). Our analysis does not employ these more sophisticated methodological

¹ In the text that follows, we describe variables as they are defined at the tract level; neighborhood-level variables are constructed by aggregating census tract measures.

techniques; rather, our focus is on collecting data across a range of domains, as opposed to doing a methodologically more advanced analysis on only one neighborhood factor.

Figure 3.1
Neighborhood Clusters and Census Tracts in the District



3.1 Measures of the Socioeconomic Environment

We classified the first set of measures in Table 3.1 as those capturing the socioeconomic environment.

Table 3.1
Contextual Measures for the District: Socioeconomic Measures

General Measure	Source	Specific Measure	Year
Poverty	Census/CPHHD	Percentage of households with income under the federal poverty line (FPL)	2009*
Income	Census/CPHHD	Median household income	2009*
Education	Census/CPHHD	Percentage of adults with less than a high school education	2009*
Family structure	Census/CPHHD	Percentage of children living in single parent households	2009*

NOTES: CPHHD is the Center for Population Health and Health Disparities, a trans-NIH center housed at RAND, which developed intercensal estimates of key variables.

* Indicates extrapolated values based on tract-level patterns between 1990 and 2000.

As shown in Table 3.1, most of the social measures are derived from U.S. Census data. Measures for 2009 are extrapolated using earlier years of data; more specifically, they are derived by developing an estimate of yearly change in specific variables at the census-tract level using the observed change between 1990 and 2000 and applying the estimated yearly change forward. In addition to these variables, we would also like to measure social capital, social cohesion, trust, or collective efficacy across areas within the District; however, we were not able to obtain appropriate data. Primary data collection is one means by which such measures may be developed in the future.

3.2 Measures of the Physical Environment

Table 3.2 provides information about measures we developed for a number of physical domains, including neighborhood deterioration, housing, neighborhood safety, exercise environment, natural environment, food environment, and environmental toxins. For more information about the measurement of these factors, please see Appendix E.

Figures F.1 to F.12 in Appendix F provide maps of key variables and indices. In the rest of this chapter, we first show maps of the SES index for each census tract and neighborhood (Figures 3.2 and 3.3). We then provide maps of the health environment index (exclusive of SES) for tracts and neighborhoods (Figures 3.4 and 3.5). Finally, we combine information from the SES and health environment indices into a single map that depicts tracts (neighborhoods) that have the lowest health environment values (colored red, yellow, and green) and that highlights in red (yellow) those tracts that not only have a low health environment index but also have a low (mid-level) SES index (Figures 3.6 and 3.7).

Table 3.2
Measures of the District's Physical Environment

General Measure	Source	Specific Measure	Year
Neighborhood Deterioration			
Vacant housing	CPHHD/Census	Number of vacant units/number of housing units	2000†
Vacant housing	OCTO/DCRA	Number of vacant lots per total record lots (also derived per capita)	2008
Housing			
Overcrowded housing	CPHHD/Census	Percent of households with greater than 1.01 people per habitable room	2009*
Severely overcrowded housing	CPHHD/Census	Percent of households with greater than 1.51 people per habitable room	2009*
Neighborhood Safety			
Residential mobility	CPHHD/Census	Percent of 5+ pop. in same house as 5 years earlier	2009*
Violent crime	MPD	Annual violent crime incidents per capita	2008
Nonviolent crime	MPD	Annual nonviolent crime incidents per capita	2008
Liquor stores	OCTO/ABRA	Number of take-out alcohol outlets per capita	2008
Exercise Environment			
Public recreation facilities	DCPR	Number of community recreation centers and swimming pools per youth population (0–21)	2008
Bike lanes and trails	OCTO/DDOT/NPS	Linear miles of bike lanes and trails/linear miles of road	2008
Parks	OCTO	Square miles of park land/square miles in tract	2002
Sidewalks	OCTO	Linear miles of sidewalk/linear miles of road	2006
Street Connectivity			
Street connectivity	Census TIGER files/CPHHD	Ratio of the number of complete loops (blocks that can be traversed in a circle) to the maximum possible number of loops	2000
Street connectivity	Census TIGER files/CPHHD	Ratio of the number of streets to the number of intersections	2000
Natural Environment			
Tree cover	OCTO/DDOT	Number of street trees per capita	2008
Food Environment			
Supermarkets	HRLA	Major grocery stores per capita	2009
Fast food outlets	HRLA	Chain fast food restaurants and convenience stores per youth population (0–21)	2009
Air Pollution			
Traffic density	DDOT	Percent of census tract (in square miles) within 150m of 100,000-AADT roads	2006
Traffic density	DDOT	Percent of census tract (in square miles) within 100m of 50,000-AADT roads	2006
Traffic density	DDOT	Percent of census tract (in square miles) within 50m of 10,000-AADT roads	2006

NOTES: OCTO is the District government's Office of the Chief Technology Officer; MPD is the D.C. Metropolitan Police Department; ABRA is the Alcoholic Beverage Regulation Administration; DCPR is D.C. Department of Parks and Recreation; DDOT is D.C. Department of Transportation; NPS is the National Park Service; DCRA is Department of Consumer and Regulatory Affairs; HRLA is the Health Regulation and Licensing Administration of the D.C. Department of Health. AADT is Annual Average Daily Traffic, which is measured for both directions of the roadway and is seasonally adjusted.

* Indicates extrapolated values based on tract-level patterns between 1990 and 2000.

† Unlike with other Census measures, we do not use extrapolation to create 2009 measures of vacant housing because of the cyclical nature of changes in vacant housing, which resulted in extrapolated estimates for 2009 of greater than 100 percent for some census tracts.

3.3 SES Indices

Figures 3.2 and 3.3 depict the values of the SES index for each census tract (Figure 3.2) and neighborhood (Figure 3.3) in the District, with darker shaded areas having higher-SES indices and lighter shaded areas indicating lower-SES indices.

Figure 3.2
SES Index, by Census Tract, 2009

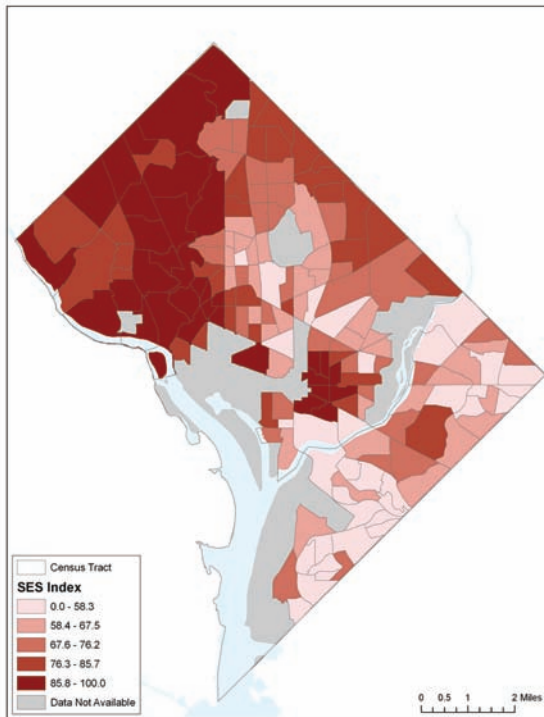
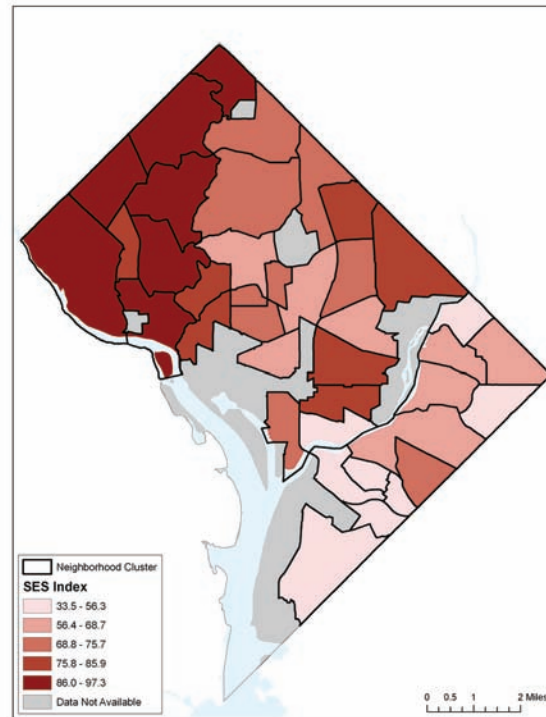


Figure 3.3
SES Index, by Neighborhood, 2009



3.4 Health Environment Indices

Figures 3.4 and 3.5 show the overall health environment index by census tract (Figure 3.4) and neighborhood (Figure 3.5). As described in Section 3.5, the health index is composed of variables capturing neighborhood safety, the exercise environment, prevalence of vacant housing, extent of overcrowded housing, degree of street connectivity, extent of tree cover, and air pollution; the health index does not include any measure of SES.

Figure 3.4
Health Environment Index, by Tract
(Exclusive of SES), 2009

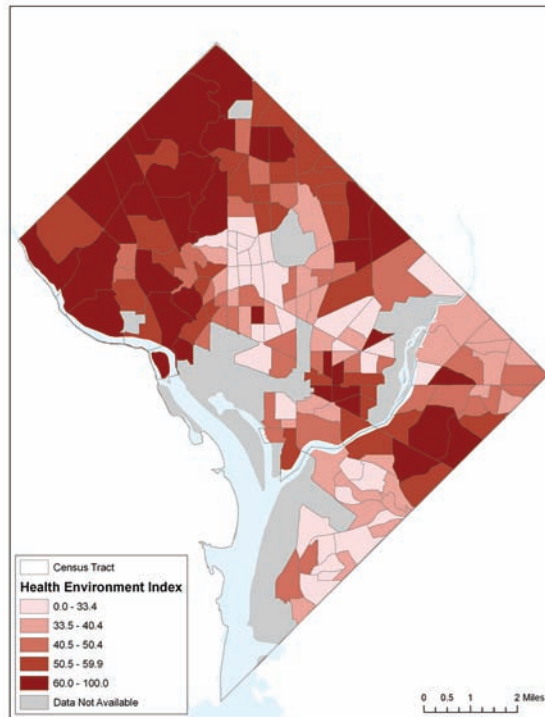


Figure 3.5
Health Environment Index, by
Neighborhood (Exclusive of SES), 2009

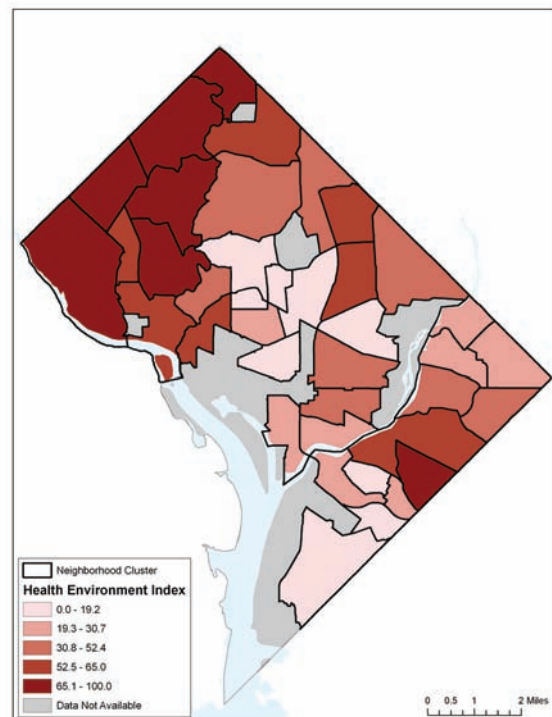


Figure 3.6
Health and SES Indices, by Tract, 2009

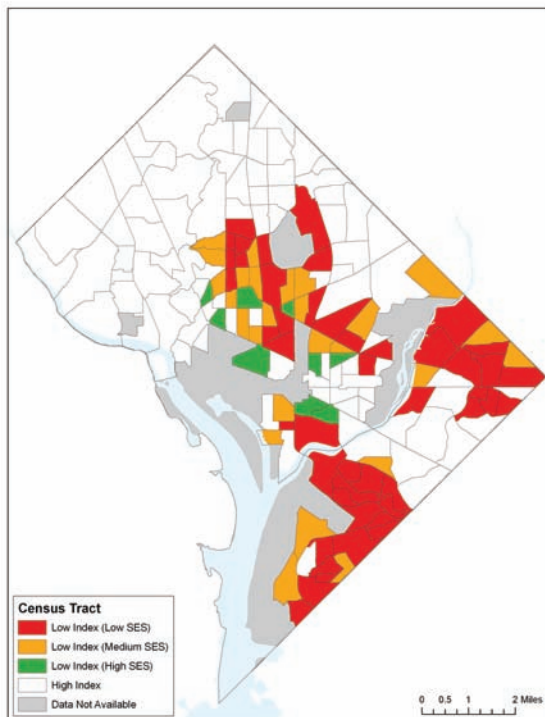
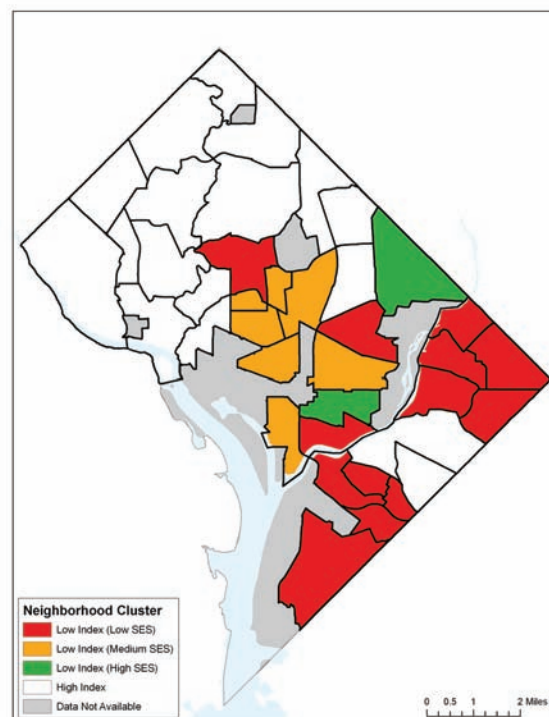


Figure 3.7
Health and SES Indices, by Neighborhood, 2009



3.5 Combined Health Environment and SES Measures

We combine information from the SES and health environment indices into a single map that depicts tracts (neighborhoods) that have the lowest health environment values (colored red, yellow, and green) and that highlights in red (yellow) those tracts that not only have a low health environment index but also have a low (mid-level) SES index. Figures 3.6 and 3.7 are the combined health environment/SES maps.

These maps highlight in red those tracts that have both low health indices and low SES indices and thus identify those tracts and neighborhoods that are least conducive to positive health outcomes and are likely to be areas that would benefit most from interventions to improve the health environment. The neighborhoods with the lowest SES indices among those with the lowest health indices are the following:²

- Cluster 2: Columbia Heights, Mt. Pleasant, Pleasant Plains, Park View
- Cluster 23: Ivy City, Arboretum, Trinidad, Carver Langston
- Cluster 27: Near Southeast, Navy Yard
- Cluster 28: Historic Anacostia
- Cluster 29: Eastland Gardens, Kenilworth
- Cluster 30: Mayfair, Hillbrook, Mahanig Heights
- Cluster 31: Deanwood, Burrville, Grant Park, Lincoln Heights, Fairmont Heights
- Cluster 32: River Terrace, Benning, Greenway, Fort Dupont
- Cluster 33: Capitol View, Marshall Heights, Benning Heights
- Cluster 36: Woodland/Fort Stanton, Garfield Heights, Knox Hill
- Cluster 37: Sheridan, Barry Farm, Buena Vista
- Cluster 38: Douglass, Shipley Terrace
- Cluster 39: Congress Heights, Bellevue, Washington Highlands

The neighborhoods with the lowest health environment indices but with mid-range SES indices are the following:

- Cluster 3: Howard University, Le Droit Park, Cardozo/Shaw
- Cluster 7: Shaw, Logan Circle
- Cluster 8: Downtown, Chinatown, Penn Quarter, Mount Vernon Square, North Capitol Street
- Cluster 9: Southwest Employment Area, Southwest/Waterfront, Fort McNair, Buzzard Point
- Cluster 21: Edgewood, Bloomingdale, Truxton Circle, Eckington
- Cluster 25: Union Station, Stanton Park, Kingman Park

3.6 Summary

This chapter examines the physical and social profiles of District of Columbia neighborhoods, focusing on those characteristics most likely to affect residents' health. We created health and SES indices at the census tract level and at the neighborhood level. The health index is composed of variables capturing neighborhood safety, the exercise environment, prevalence of

² A description of the clusters may be found at <http://www.neighborhoodinfodc.org/nclusters/nclusters.html>

vacant housing, extent of overcrowded housing, degree of street connectivity, extent of tree cover, and air pollution. Maps combining information from the health index with information from the SES index suggest several areas of the District that may benefit most from interventions to improve the health environment. These include Columbia Heights, Mt. Pleasant, Pleasant Plains, Park View, Ivy City, Arboretum, Trinidad, Carver Langston, Near Southeast, Navy Yard, Historic Anacostia, Eastland Gardens, Kenilworth, Mayfair, Hillbrook, Mahan- ing Heights, Deanwood, Burrville, Grant Park, Lincoln Heights, Fairmont Heights, River Terrace, Benning, Greenway, Fort Dupont, Capitol View, Marshall Heights, Benning Heights, Woodland/Fort Stanton, Garfield Heights, Knox Hill, Sheridan, Barry Farm, Buena Vista, Douglass, Shipley Terrace, Congress Heights, Bellevue, and Washington Highlands.

Section II

Health and Health Care Use Among Children in the District

Health Insurance, Sociodemographic Characteristics, and Health Status of District Children

This chapter profiles health insurance coverage and sociodemographic and health characteristics of District children using data primarily from the District of Columbia Department of Health (DOH), the Centers for Disease Control and Prevention (CDC), the CDC Youth Risk Behavior Survey (YRBS), and the National Survey of Children's Health (NSCH) (see Appendix B for more details on the NSCH).

Section 4.1 covers health insurance coverage of District children. We then turn to their sociodemographics (Section 4.2). Section 4.3 describes the health status of District children, including general health status measures, prevalence of chronic conditions, obesity and overweight, mental health and substance abuse disorder, prevalence of selected conditions among publicly insured children, and HIV/AIDS. Section 4.4 profiles reproductive health (sexual behavior, teen pregnancy, and sexual transmitted infections) among District youth. Section 4.5 describes youth violence. Section 4.6 describes District youth in the juvenile justice and dependency systems and Section 4.7 profiles mortality rates among children.

4.1 Health Insurance Coverage

Recent D.C. Department of Health Care Finance (DHCF) estimates indicate that approximately 60 percent of District children are publicly insured. As of May 31, 2009, 85,793 children ages 0–21 were covered by Medicaid, and 1,944 children were covered by D.C. Alliance.¹ All children with D.C. Alliance and the majority of children with Medicaid are covered by one of four managed care plans: Chartered Health, Health Right, Unison, and Health Services for Children with Special Needs (HSCSN).² HSCSN primarily enrolls disabled children who are eligible for Supplemental Security Income (SSI). Nearly 13,000 children are covered in a fee-for-service Medicaid plan; a portion of these are disabled children who choose not to be in HSCSN. Table 4.1 describes the breakdown of youth Medicaid enrollment by insurance plan.

¹ Personal communication with D.C. DHCF staff, June 2009. Medicaid encompasses the State Children Health Insurance Program. D.C. Medicaid expanded its coverage to include children ages 18 and under up to 300 percent of poverty (from 200 percent of poverty) in 2007. It covers youth ages 19–20 up to 200 percent of poverty. The D.C. Alliance provides health care access to some children who lack legal documentation.

² To be enrolled in HSCSN, a child must be eligible for Supplemental Security Income (SSI) and be under the age of 24. Enrollment is voluntary, with other SSI children having the option to remain in fee-for-service Medicaid.

Table 4.1
Medicaid Coverage by Plan Among District Children Ages 0–21

Insurance	Number of Children Covered
<i>All Medicaid</i>	85,793
Fee-for-service (FFS)	12,704
Chartered Health Care	45,644
Health Right	14,986
Unison	9,020
HSCSN	3,439

SOURCE: Personal communication, D.C. Department of Health Care Finance, June 2009.

The best estimates of uninsurance among children are those derived from the NSCH. According to data from the 2007 NSCH, approximately 3.5 percent of District children did not have health insurance. This was not statistically significantly different from the rate in 2003. It was lower than the national rate of uninsured children, which was 9.1 percent. The percentage of children with no insurance varies by ward; 2003 estimates suggest that rates of uninsurance are highest in Wards 1 and 4.

4.2 Sociodemographic Characteristics of District Youth

Mirroring the racial distribution of the District's total population, approximately 54 percent of the city's youth population was African American, 39 percent was white, and 6 percent was Hispanic or Latino. The subsections that follow profile the income distribution, family structure, and education of the families of District children.

4.2.1 Income

Early social environment, including characteristics such as poverty and family structure, not only frames the social outcomes of adulthood, but also impacts health during childhood (Newacheck, 1994; Bauman, Silver, and Stein, 2006). Children living in low-income households are more likely to live in high-poverty neighborhoods, which may expose them to both psychological stresses (such as crime) and physical stresses (such as lead poisoning and rat dander). These stresses contribute to high rates of chronic diseases, such as asthma, and negatively affect mental health (Sastry and Pebley, 2003; Wood, 2003; Aneshensel and Sucoff, 1996).

The percentage of children under age 18 in the District living in poverty has steadily decreased since 2003.³ The number of children living below 100 percent of poverty dropped from 27 percent in 2003 to 23 percent in 2007. Despite this decline, the percentage of children living in poverty in the District is still above the national average, which was 18 percent in 2007. Likewise, the percentage of children living below 50 percent of poverty also remains above the national rates. In 2007, 12 percent of D.C. children lived below 50 percent of poverty, compared to 8 percent nationally. The 2007 median income of families with children

³ According to the U.S. Office of Management and Budget (OMB), the poverty threshold for a family of two adults and two children was \$17,463. The 50 percent poverty threshold, or extreme poverty, is an annual household income of \$8,731 for a family of four. Children living below a given threshold are living below that income defined for his/her household family size.

under age 18 was \$42,489 compared to a national median income of \$58,686 (American Community Survey Factfinder, 2008). (See Table 4.2.) About 32 percent of children under age 18 lived in households receiving some type of public assistance (social security income, food stamps, or cash public assistance) in 2007, compared to 18 percent of children nationally (American Community Survey Factfinder, 2008).

4.2.2 Family Structure

Single-parent family structure and poverty have cumulative adverse effects on child health outcomes. Children with these combined social disadvantages are more likely to have poor health status, even when controlling for insurance (Bauman, Silver, and Stein, 2006). Children raised by single parents also tend to have lower educational, occupational, and economic attainment compared to peers from traditional two-parent families (Mueller and Cooper, 1986).

Table 4.2 shows the percentage of children living in single-parent households. In 2007, just under 60 percent of D.C. children under the age of 18 lived in single-parent households (down from 67 percent in 2004), which is significantly higher than the national average (31 percent). The percentage of children under 18 living in households principally headed by a grandparent remained relatively stable (around 13 percent) between 2002 and 2006; however, it is about double the national average (7 percent).

4.2.3 Education

Higher levels of education have been correlated with better health outcomes. Specifically, education is a direct factor in income and employment (Ross and Wu, 1995). Educational achievement is also associated with improved health status and lower rates of high-risk behaviors, such as smoking. High-school dropout rates are a useful proxy for educational attainment and therefore provide insight to the health status of children (Freudenberg and Ruglis, 2007). In the District, dropout rates have decreased from 2002 (12 percent) to 2007 (8 percent). The most recent rates are consistent with the national average (about 7 percent) (Annie E. Casey Foundation, Kids Count Data Center).

Table 4.2
Poverty, Family Structure, and Income—Percentage of Children Age 18 and Under, by Indicator, 2002–2007

	D.C.						U.S.
	2002	2003	2004	2005	2006	2007	2007
Less than 100% of poverty	27.0	35.2	33.9	32.2	32.4	22.7	18.0
Less than 50% of poverty	N/A	N/A	N/A	20.0	17.2	12.0	7.9
Living in household receiving SSI, food stamps, or cash public assistance in prior year	N/A	N/A	33.8	36.2	31.2	31.9	18.2
Living with single-parent householder	N/A	N/A	67.4	63.4	61.9	59.4	31.4
Living with grandparent householder	11.5	13.0	13.0	13.0	14.8	13.4	6.5

SOURCE: American Community Survey (ACS) Census Factfinder. Percentages are based on one-year estimates from the ACS and have a margin of error (not shown). Percentage of youth ages 16–19 not enrolled in school or labor force is based on a three-year ACS estimate.

N/A: Not available.

4.3 Health Status

In this section, we describe general health status among children in the District (Section 4.3.1), and the prevalence of key health conditions (Sections 4.3.2–4.3.7).

4.3.1 General Health Status

Table 4.3 describes the overall health status among District children (physical and oral). It compares 2007 estimates with 2003 estimates for the District as well as 2007 estimates for all children nationally. Key findings include the following:

- 2.3 percent of children in the District were reported to be in poor or fair health, not significantly different from the national average (3.5 percent) but lower than the D.C. average in 2003 (4.1 percent). The drop represents an improvement in the reported overall health of District children.
- 8.5 percent of District children were reported to require more medical care than other children, which is consistent with the national numbers (9.1 percent).
- 4 percent of District children were limited in their usual activities because of a health condition. This was a stable and nationally comparable percentage.
- 8.8 percent of District children had poor or fair dental health, similar to 2003 and not different from the national average (8.4 percent).
- 30.6 percent of children reported having one of the following in the past six months: toothache, decayed teeth or cavities, broken teeth, or bleeding gums. This is higher than the U.S. average of 26.8 percent.

Table 4.3
General Health Status Among District Children (%)

	D.C. (2007)	D.C. (2003)	U.S. (2007)
Poor/fair health	2.3* (1.4–3.2)	4.1** (2.9–5.2)	3.5 (3.0–3.9)
Requiring more medical care than other children	8.5 (6.9–10.2)	8.7 (7.1–10.3)	9.1 (8.6–9.5)
Limited in ability to do things	4.0 (2.7–5.3)	3.6 (2.5–4.7)	3.6 (3.3–4.0)
Poor/fair dental health	8.8 (6.6–10.9)	8.9 (7.3–10.6)	8.4 (7.8–9.0)
Dental problems	30.6* (27.5–33.8)	N/A	26.8 (26.0–27.6)

SOURCE: Authors' analysis of 2003 and 2007 NSCH data.

NOTES: Dental problems include decayed teeth or cavities, toothache, broken teeth, and bleeding gums.

95% confidence intervals are in parentheses.

* Statistically significant difference from 2007 U.S. mean at .05 level.

** Statistically significant difference from 2007 citywide mean at .05 level.

N/A = not available.

Table 4.3a shows selected estimates of general health status among children by ward of residence in the District. Parents in Ward 3 are less likely to report only poor or fair general health, as are parents in Ward 8. Parents in Ward 1 are most likely to report fair or poor dental health among their children (14 percent versus 9 percent citywide).

Table 4.3a
General Health Status Among District Children, by Ward, 2007 (%)

		Ward							
	D.C.	1	2	3	4	5	6	7	8
General health, poor/fair	2.3	3.0	2.5	0.9*	3.2	2.0	2.3	3.2	1.0*
Dental health, poor/fair	8.8	13.8*	6.0	2.6*	8.0	6.4*	6.4*	11.0	10.8

SOURCE: Authors' analyses of NSCH data.

* Statistically significant difference from 2007 D.C. mean at .05 level.

4.3.2 Health Conditions: Any Chronic Condition

Table 4.4 describes the percentages of children reporting ever having or currently having a chronic condition. Of children in the District, 31.1 percent reported ever having one or more chronic physical conditions, higher than the national average.⁴ In 2007, the list of chronic conditions elicited was more extensive than in 2003, making comparison over time somewhat difficult. Not surprisingly, older children were more likely to report having had a chronic condition, in part because the likelihood of having any condition increases over time (data not shown). In 2007, children were asked if they *currently* had one of the chronic conditions. Among D.C. children, 19.3 percent reported currently having a chronic condition, higher than the U.S. average of 15.2 percent.

Families were also asked about specific conditions experienced in the past 12 months.⁵ In 2007, 37.5 percent of D.C. children had experienced one or more of these conditions, which is similar to 2003 rates in the District but slightly higher than the national average of 32.0 percent. For 14.8 percent of District children, at least one of the conditions was moderate or severe (data not shown). There were no significant differences by age group either in the District or nationally (data not shown).

4.3.3 Health Conditions: Overweight and Obesity

Youth obesity is a predictor of future adult health outcomes.⁶ Youth who are overweight or obese are at risk for a number of serious health risks, including diabetes, cardiovascular disease,

⁴ This excludes behavioral and emotional conditions such as attention deficit disorder or attention deficit hyperactivity disorder, depression, anxiety problems, behavior or conduct problems, autism or Asperger's disorder, or any developmental delay.

⁵ This includes hay fever, food allergy, eczema, skin allergy, frequent or severe headaches (ages 5–17 only), and three or more ear infections.

⁶ Traditionally, the term “overweight” has been applied to children whose body mass index (BMI) is at or above the 95th percentile, based on the sex-specific BMI for age growth charts. However, recent expert committee recommendations (Institute of Medicine and American Academy of Pediatrics) have suggested use of the term “obesity” for children with BMI \geq 95th percentile to reflect the correlation of high BMI with excess body fat among children and to emphasize the clinical risk of such weight status (American Academy of Pediatrics, 2007).

Table 4.4
Chronic Conditions Among Children in the District (Parent Report) (%)

	D.C. (2007)	D.C. (2003)	U.S. (2007)
<i>Ever had one or more chronic conditions^a</i>			
All children	31.3* (28.1–34.5)	29.5 (26.7–32.2)	26.8 (26–27.5)
Children ages 2–5	23.2 (17.3–29.0)	21.7 (17.0–26.4)	20.0 (18.5–21.4)
Children ages 6–12	32.4* (27.5–37.3)	29.7 (25.4–34.0)	27.3 (26.0–28.5)
Children ages 13–17	34.0 (28.0–40.0)	34.9 (29.4–40.3)	U.S. (2007)
<i>Currently have one or more chronic conditions^a</i>			
	19.3* (16.7–21.9)	N/A N/A	26.8 (26–27.5)
<i>Other conditions in the past 12 months^b</i>			
	37.5* (34.5–40.6)	38.6 (35.6–41.6)	20.0 (18.5–21.4)

SOURCE: Authors' analysis of NSCH data.

* Statistically significant difference from 2007 U.S. mean at .05 level.

** Statistically significant difference from 2007 citywide mean at .05 level.

NOTE: 95% confidence intervals in parentheses.

^a For 2007, the listed conditions were stuttering, stammering, or other speech problems; Tourette syndrome; asthma; diabetes; epilepsy or seizure disorder; hearing problems; vision problems; bone, joint, or muscle problems; and brain injury or concussion. For 2003, the conditions were asthma; diabetes; hearing problems or vision problems; and bone, joint, or muscle problems.

^b Includes hay fever, food allergy, eczema, skin allergy, frequent or severe headaches (ages 5–17 only), and three or more ear infections.

and early mortality. We analyzed both the NSCH (parent report, for children ages 6–17) and YRBS (youth report, for children in grades 9–12) to describe obesity and overweight issues among District youth (Tables 4.5–4.6).

According to the 2007 NSCH, 29 percent of children ages 6–12 were obese and another 15 percent were overweight. Among children ages 13–17, 15 percent were obese and 15.5 percent were overweight. There were few differences over time and no significant differences compared to national averages.

Seventeen percent of youth reported not engaging in any physical activity during the week for at least 20 minutes on one day. This is higher than the national estimate of 10.3 percent. We also looked at rates of exercise by ward and found that lack of exercise was substantially more pervasive among children in Wards 1, 6, 7, and 8 (ranging from 22 to 27 percent of children in these areas who never exercised).

Similarly, nearly one-fourth of District parents reported no physical activity, compared to 16 percent of parents nationwide.

YRBS estimates of overweight are substantially higher than NSCH estimates and suggest higher rates of overweight in the District compared to the nation. Among youth in grades 9–12 (roughly the 13–17 age group in the NSCH), 36 percent report being overweight or obese, compared to 17 percent of youth reported to be overweight in the NSCH. Thirty-four percent

Table 4.5
Overweight, Obesity, and Exercise Among District Youth, 2003 and 2007 (Youth Report) (%)

	D.C. (2007)	D.C. (2003)	U.S. (2007)
Obese, ages 6–12	28.6 (21.1–36.2)	36.3 (31.3–41.2)	21.3 (19.5–23.1)
Overweight, ages 6–12	14.7 (8.9–20.6)	16.5 (12.7–20.3)	16.8 (15.3–18.3)
Obese, ages 13–17	14.7 (10.7–18.7)	17.2 (12.6–21.7)	13.7 (12.6–14.7)
Overweight, ages 13–17	15.5 (10.6–20.5)	17.2 (12.5–21.9)	14.4 (13.4–15.5)
Did not participate in physical activity in past week ^a	17.4* (14.1–20.7)	16.6 (13.8–19.3)	10.3 (9.7–11.0)
Parents did not participate in physical activity ^b	23.0* (20.2–25.8)	N/A	16.3 (15.7–17.0)

SOURCE: Authors' analysis of NSCH data.

* Statistically significant difference from 2007 U.S. mean at .05 level.

NOTE: 95% confidence interval in parentheses.

^a Did not exercise, play sports, or engage in physical activity for at least 20 minutes on at least one day during the past week.

^b Neither mother nor father exercised, played sports, or engaged in physical activity for at least 20 minutes on at least one day during the past week.

Table 4.6
Overweight, Obesity, and Exercise Among Youth in Grades 9–12, 1999–2007 (%)

	1999	2001	2003	2005	2007
Overweight but not obese					
D.C.	18.7	—	19.9	20.7 ^{a,b}	17.8
U.S.	14.4	13.6	14.8	15.7	15.8
Obese					
D.C.	12.7	—	13.4	10.6	17.7 ^{a,b}
U.S.	10.7	10.5	12.1	13.1	13
Met recommended level of exercise (60 minutes, 5 or more days/week)					
D.C.	—	—	—	18.2 ^b	30.2 ^a
U.S.	—	—	—	35.8	34.7
Watched TV 3 or more hours per day					
D.C.	63.9 ^b	—	56.7 ^{a,b}	61.9 ^b	52.5 ^{a,b}
U.S.	42.8	38.3	38.2	37.2	35.4
Played computer or video games 3+ hours per day					
D.C.	—	—	—	—	27.3
U.S.	—	—	—	—	24.9

SOURCE: Authors' analysis of YRBS and YRBS National Trends in Risks Behaviors.

NOTES: Weighted data on exercise prior to 2005 were not available. Weighted data on computer and video game use were not available prior to 2007.

^a Statistically significant difference between current survey year and preceding survey year, $p < 0.05$.

^b Statistically significant difference between D.C. and U.S., $p < 0.05$.

of youth in this age group are reported to be obese or overweight. Some of the differences may reflect reporting differences in weight/height between parents and youth.⁷

In the YRBS, District youth in grades 9–12 reported significantly higher rates of obesity than did those in the country as a whole. Eighteen percent of District youths (grades 9–12) were reported to be obese in 2007, significantly higher than the national youth obesity rate of 13 percent. Further, obesity rates in this age group rose significantly in the District between 2005 to 2007—from 10.6 to 17.7 percent. In contrast, national rates remained steady.

Thirty percent of District youth met recommended exercise guidelines, which was similar to the national rate. Over half of District youth reported watching more than three hours of television per day (compared to 35 percent of youth nationwide), and about one-quarter of youth in this age range reported playing computer or video games more than three hours a day. Despite the increase in obesity rates in the District, rates of exercise increased from 2005 to 2007, and rates of extended television watching decreased.

Table 4.7 repeats Table 4.6 but for middle school students in the District. No comparable U.S. data are available. Key findings include the following:

- In 2005, 27 percent of children in grades 6–8 reported being overweight and 11 percent reported being obese; thus, a greater fraction of middle school students reported overweight or obesity in 2005 (38.5 percent in total) compared to high school students (33.3 percent in total).
- Between 2003 and 2005, the rate of overweight rose (22 to 27 percent), but the rate of obesity fell (17 to 11 percent).
- In 2005, only 38 percent of middle school children reported 20 minutes of exercise five out of the prior seven days; however, 64 percent that same year and 56 percent in 2007 reported watching television more than three hours a day. The rate of television watching was greater among middle school students than among high school students.
- Seventy-two percent of middle school children played computer or video games more than three hours a day; this estimate is substantially higher than that among high school students (27 percent) for the same year.

Table 4.7
Overweight, Obesity, and Exercise Among District Youth in Grades 6–8, 1999–2007 (%)

	1999	2001	2003	2005	2007
Overweight but not obese	21.0	23.2	22.2	27.4 ^a	—
Obese	12.8	17.4 ^a	17.3	11.1 ^a	—
Intense level of exercise (20 minutes or more, 5 or more days/week)	35.8	33.1	37.7	38.0	—
Watched TV 3 or more hours per day	66.6	58.3	62.8	64.3	55.5
Played computer or video games 3+ hours per day	—	—	—	—	71.7

SOURCE: Authors' analysis of YRBS. Weighted data on exercise prior to 2005 were not available, weighted data on computer and video game use were not available prior to 2007.

^a Statistically significant difference between current survey year and preceding survey year, $p < 0.05$.

⁷ *Obesity* is defined as BMI > 95 percentile for standard reference for age and sex. *Overweight* is defined as BMI between the 85th and 95th percentile for standard reference for age and sex. Both the NSCH and YRBS define BMI the same way; however, the NSCH found that in comparing height and weight estimates based on parent reports with the independent measurement from the National Health and Nutrition Examination Survey, height was generally underreported and weight was generally overreported for children under 10 years of age.

4.3.4 Health Conditions: Mental Health

Pediatric mental health diagnoses can include a number of categories, including attention deficit and disruptive behavior disorders (such as ADHD), anxiety, autism, eating disorders, depression, bipolar disease, and schizophrenia.

Depression, bipolar disorder, and dysthymia⁸ are the most commonly diagnosed mood disorders among the U.S. pediatric population (USDHHS, 1999). Although many children may report feelings of depression at any given time, approximately 5 percent of children between the ages of 9 and 17 have a diagnosis of major depressive disorder. Depression can diminish school performance and lead to an increased risk of suicide; children diagnosed with depression also have a significantly increased risk of persistent depression in adulthood (Bhatia and Bhatia, 2007). Depression symptoms⁹ are typically presented as scales whereby high index scores indicate greater symptoms of depression.

Among school-aged children, anxiety disorders (including social phobias and general anxiety and obsessive compulsive disorder) are thought to be the most prevalent of all pediatric mental health conditions, with approximately 13 percent of children nationally between the ages of 9 and 17 with this diagnosis.

Table 4.8 profiles mental health status among District children in 2007 with comparisons both to District children in 2003 and to the United States as a whole in 2007.

Approximately 9 percent of District parents reported that their children had an emotional, developmental, or behavioral problem for which they needed treatment or counseling, which is not statistically significant from the national estimate (8.6 percent in the District in 2007 versus 7 percent in the United States). Further, 9.5 percent of children ages 2 to 17 in the District had one of several emotional or behavioral problems and 5.8 percent describe the condition as moderate or severe. The conditions include attention deficit disorder, depression, anxiety problems, behavior or conduct problems, autism, Asperger's disorder, and other developmental delays.

While the D.C. rates of specific mental conditions were comparable to national averages in 2007, the rates of current learning disabilities and problematic behaviors were higher than the U.S. average. In the District, 8.4 percent of youth ages 3–17 currently had a learning disability and 13.4 percent exhibited two or more problematic behaviors (such as bullying), compared to 6.5 and 8.8 percent, respectively, for the nation.¹⁰

Approximately 9 percent of District children had a written early intervention plan called an Individual Family Services Plan (IFSP) or Individualized Education Program (IEP) for their developmental or health problems. This rate increased with age. Among very young children (ages 0–5) the rate was 3 percent. Among school-age children, 12.1 percent of those ages 6–12 had an IEP, while 15 percent of older school children had an IEP. There were no statistical differences in District versus national rates of IEPs or IFSPs.

⁸ *Dysthymia* refers to a mood disorder characterized by chronic mild to moderate chronic depressive symptoms that are less severe than major depression. Persons must have symptoms for at least two years (one year in children) characterized by at least two DSM-IV criteria (eating less/more, problems with sleep, fatigue, low self-esteem, difficulty with concentration or decision making, and feelings of hopelessness).

⁹ The symptoms are feeling worthless, being unhappy or sad, and being withdrawn or not getting involved with others.

¹⁰ The 2003 survey asked whether a child had “ever” been told he or she had a learning disability, rather than whether or not the child currently had a learning disability. The 2007 survey asked a similar question, permitting comparisons. Based on this set of questions, there was no statistically significant change over time (13.6 percent in 2007 compared to 12.9 percent in 2003).

Table 4.8
Mental Health Conditions and Learning Disabilities Among Children in the District, 2003 and 2007 (%)

	D.C. (2007)	D.C. (2003)	U.S. (2007)
Emotional, developmental, or behavioral problem needing treatment	8.6 (6.7–10.5)	9.0 (7.2–10.7)	7.0 (6.6–7.4)
Specific mental health condition ^a	9.5 (7.7–11.4)	N/A	10.0 (9.5–10.5)
Moderate or severe mental condition ^a	5.8 (4.2–7.4)	N/A	5.8 (5.4–6.2)
Current learning disability	8.4* (6.6–10.2)	N/A	6.5 (6.1–6.9)
Current moderate or severe learning disability	4.0 (2.7–5.3)	N/A	3.3 (3.0–3.6)
Lacking social skills ^b	4.2 (2.3–6.2)	3.1 (1.7–4.5)	2.8 (2.4–3.2)
Problematic behaviors ^c	13.4* (10.3–16.5)	12.2 (9.6–14.8)	8.8 (8.3–9.4)
Depression symptoms index ^d (mean)	4.9 (4.7–5.1)	N/A	4.8 (4.8–4.9)
IFSP or IEP ^e (all children)	9.4 (7.6–11.2)	N/A	8.8 (8.3–9.2)
Ages 0–5	3.0 (1.3–4.7)	N/A	3.9 (3.4–4.4)
Ages 6–12	12.1 (8.7–15.5)	N/A	10.9 (10.1–11.7)
Ages 13–17	15.0 (10.5–19.5)	N/A	11.5 (10.5–12.5)

SOURCE: Authors analyses of NSCH.

NOTE: 95% confidence intervals in parentheses.

* Statistically significant difference from 2007 U.S. mean at .05 level.

** Statistically significant difference from 2007 citywide mean at .05 level.

^a Attention deficit disorder or attention deficit hyperactivity disorder, depression, anxiety problems, behavior or conduct problems, autism, Asperger's disorder, or any developmental delay.

^b Lacking two or more of the following: getting along with other children, trying to understand others' feelings, trying to resolve conflicts, showing respect for teachers and neighbors.

^c Two or more of the following: argues too much, bullies/is cruel, disobedient, stubborn/sullen.

^d Symptoms may include feels worthless or inferior; unhappy, sad or depressed; or is withdrawn.

^e Written intervention plans called Individual Family Services Plan (IFSP) or Individualized Education Program (IEP).

Depression is measured both in the NSCH and in the YRBS (albeit differently), and the YRBS also contains questions about suicidal ideation. Table 4.9 shows estimates of depression and suicidal ideation from YRBS estimates. Key findings include the following:

- Parents of District children reported a similar degree of depression symptoms among their children compared with parents nationally (with a D.C. index mean of 4.9 compared to 4.8 nationally) (NSCH).
- In 2007, approximately 27 percent of youth between grades 9 and 12 reported having depression that interfered with their usual activity in the prior year, similar to the national rate of 29 percent (YRBS).
- Fifteen percent of youth in grades 9–12 seriously considered suicide in the prior year, as did 24 percent of youth in grades 6–8.
- Of youth in grades 6–12, 12–13 percent reported having a suicide plan.
- Estimates have fluctuated from year to year, but with no discernible consistent time trend.

Table 4.9
Depression and Suicidal Ideation Among Students in Grades 9–12 and 6–8, 1997–2007 (%)

	1997	1999	2001	2003	2005	2007
Grades 9–12						
Depression interfering with usual activity in prior 12 months						
D.C.	—	27.4	—	31.1	21.8 ^b	26.8
U.S.	—	28.3	28.3	28.6	28.5	28.5
Seriously considered suicide in the prior 12 months						
D.C.	17.6	13.5 ^{a,b}	—	14.2 ^b	10.8 ^{a,b}	14.9 ^a
U.S.	20.5	19.3	19.0	16.9	16.9	14.9 ^a
Made suicide plan in the prior 12 months						
D.C.	13.9	10.3 ^b	—	13.5	8.7 ^{a,b}	12.1 ^a
U.S.	15.7	14.5	14.8	16.5	13.0	11.3
Grades 6–8						
Seriously considered suicide in the prior 12 months						
D.C.	24.1	20.5	24.8	27.5	20.6 ^a	23.9
Made suicide plan in the prior 12 months						
D.C.	12.8	11.3	19.1 ^a	15.6	10.7	13.1

^a Statistically significant difference between current survey year and prior year reported, $p < 0.05$.

^b Statistically significant difference between D.C. and U.S., $p < 0.05$.

4.3.5 Health Conditions: Alcohol and Drug Use and Abuse

Substance abuse often coexists with mental health diagnoses and has been associated with a higher rate of suicide among adolescents, as well as adverse health effects resulting from high-risk behaviors, including sexually transmitted diseases and HIV (Deas, 2006; Esposito-Smythers and Spirito, 2004; Deas-Nesmith et al., 1999). In addition, substance abuse among teens is also associated with accident-related injuries and deaths (Becker and Curry, 2008).

Table 4.10 shows rates of illicit drug use among D.C. youth. Key findings include the following:

- Rates of illicit drug use were higher than the U.S. average for heroin and illegal injection drugs. In 2007, 5 percent of teens reported using heroin (versus 2 percent nationally) and just under 6 percent reported using injection drugs (versus 2 percent nationally).
- However, rates of cigarette smoking and binge drinking were lower than the U.S. average.

- Rates of use of other illicit drugs, such as marijuana, cocaine/crack, inhalants, methamphetamines, and ecstasy were generally consistent with national rates.
- Rates of drug use have remained fairly steady over the past ten years with a peak for most drugs occurring in 2003; injection drug use in 2007, however, was at its highest level in a decade.

About 45 percent of middle school students reported that they had tried alcohol in 2007; rates between 1999 and 2007 have fluctuated between 38 and 47 percent (Table 4.11). Approximately 18 percent of middle school students reported ever using marijuana in 2007, and about 5 percent reported ever using cocaine or crack during that same year.

Table 4.10
Substance Use Among District Youth in Grades 9–12, 1997–2007 (%)

	1997	1999	2001	2003	2005	2007
Current cigarette smoking (at least once during prior 30 days)						
D.C.	22.7 ^b	19.9 ^b	—	13.2 ^{a,b}	9.2 ^{a,b}	10.6 ^b
U.S.	36.4	34.8	28.5	21.9 ^a	23.0	20.0
Frequent cigarette smoking (20 or more in last 30 days)						
D.C.	8.4 ^b	6.3 ^b	—	3.8 ^b	2.0 ^b	3.1 ^b
U.S.	16.7	16.8	13.8	9.7 ^a	9.4	8.1
Current alcohol use						
D.C.	37.7 ^b	36.7 ^b	—	33.8 ^b	23.1 ^{a,b}	32.6 ^{a,b}
U.S.	50.8	50.0	47.1	44.9	43.3	44.7
Binge drinking (in past 30 days drank 5 or alcoholic drinks)						
D.C.	18.3 ^b	14.9 ^b	—	10.3 ^{a,b}	9.2 ^b	12.1 ^b
U.S.	33.4	31.5	29.9	28.3	25.5	26.0
Frequent marijuana use (at least one time in prior 30 days)						
D.C.	29.3	25.7	—	23.5	14.5 ^{a,b}	20.8
U.S.	26.2	26.7	23.9	22.4	20.2	19.7 ^a
Ever used cocaine/crack						
D.C.	3.5 ^b	2.8 ^b	—	6.2 ^a	2.1 ^{a,b}	6.2 ^a
U.S.	8.2	9.5	9.4	8.7	7.6	7.2
Ever used inhalant						
D.C.	11.4 ^b	6.1 ^{a,b}	—	9.2 ^{a,b}	5.5 ^{a,b}	10.1 ^a
U.S.	16.0	14.6	14.7	12.1	12.4	13.3
Ever used heroin						
D.C.		1.5	—	5.4 ^a	1.9 ^a	5.4 ^{a,b}
U.S.		2.4	3.1	3.3	2.4	2.3
Ever used methamphetamines						
D.C.		1.9 ^b	—	5.7 ^a	2.0 ^{a,b}	6.1 ^a
U.S.		9.1	9.8	7.6	6.2	4.4 ^a
Ever used ecstasy						
D.C.				8.8	4.0 ^a	7.7 ^a
U.S.			11.1	11.1	6.3 ^a	5.8
Ever injected an illegal drug						
D.C.	2.7	1.1	—	3.9 ^a	1.3 ^a	5.5 ^{a,b}
U.S.	2.1	1.8	2.3	3.2	2.1	2.0

SOURCE: Authors' analysis of YRBS and YRBS national trends. Missing data indicate that survey question was not asked in given year or that weighted estimates were not available.

^a Statistically significant difference between current survey year and prior year reported, $p < 0.05$.

^b Statistically significant difference between D.C. and U.S., $p < 0.05$.

Table 4.11
Substance Use Among District Students in Grades 6–8, 1997–2007 (%)

	1997	1999	2001	2003	2005	2007
Ever drank alcohol (more than a sip)	56.7	47.0 ^a	41.0 ^a	42.8	38.2	44.8 ^a
Ever used marijuana	27.6	17.8 ^a	16.9	16.5	14.7	17.9
Ever used cocaine/crack	N/A	2.8	7.1 ^a	5.7	5.7	5.2

SOURCE: Authors' analysis of YRBS. U.S. comparison data were not available.

^a Statistically significant difference between current year and prior year reported, $p < 0.05$.

4.3.6 Health Conditions: Estimated Prevalence of Selected Health Conditions Among Medicaid Managed Care and FFS Medicaid Enrollees

In this subsection, we examine the prevalence of selected conditions among publicly insured children given the number of children enrolled in these programs in the District. We use claims data for each of three groups of children: those in Medicaid or Alliance managed care, those enrolled in FFS Medicaid, and children in HSCSN. The claims data for each group are described in more detail in Appendix G. As described in Section 4.1, the majority of publicly insured children are in managed care, a smaller number of children are enrolled in FFS Medicaid, and a few thousand are enrolled in HSCSN. Children in Medicaid managed care are generally healthier than those in the HSCSN managed care plan and in FFS Medicaid, because the latter two plans serve some or all children eligible for Supplemental Security Income (SSI), a federal assistance program that provides financial support to low-income families with disabled children.

A key limitation to the estimates of the prevalence of disorders based on claims data is that children are only identified as having a diagnosis if the diagnosis is associated with a claim for health care services. Consequently, the estimates presented in this subsection understate the prevalence of a disorder to the extent that no care is received for that particular condition or that care is received for the condition but the diagnosis is not recorded in the claims data.

We examined the prevalence among children in Medicaid/Alliance managed care and FFS Medicaid of a number of conditions that we identified as “high priority.” They were chosen because they are among the more common conditions afflicting children and because of their health implications. They include asthma, attention deficit hyperactivity disorder (ADHD), autism, mental health disorders or developmental delays, obesity, diabetes, seizure disorder, sickle cell anemia, HIV/AIDS, and injury.

In addition, we looked at the prevalence of conditions in the HSCSN data using information on each child’s “qualifying diagnosis”; that is, the diagnosis associated with the child’s eligibility for disability income. We identified the most prevalent qualifying diagnoses among the HSCSN enrollees and then identified the prevalence of those conditions in the FFS data. FFS Medicaid enrollees include disabled children, but we had no information on qualifying diagnoses for this subset of FFS enrollees.

Table 4.12 profiles the prevalence of high-priority conditions by age group for Medicaid/Alliance managed care enrollees. (Appendix G describes how these conditions are defined.) The most prevalent high-priority conditions among Medicaid managed care enrollees were injury (19 percent), asthma (8 percent), and mental health disorders or developmental delays (4 percent). Asthma rates in the District were higher than national levels (7.8 percent compared to 5.4 percent nationally) but the prevalence of diabetes was the same as for the United States as a whole (0.2 percent) (Davidoff, 2004).

Table 4.12
**Prevalence of High-Priority Conditions Among Youth Enrolled in Medicaid/
 Alliance Managed Care, 2006 (%)**

	Age						All
	0	1	2–6	7–12	13–17	18–21	
Asthma	13.7	13.2	10.0	7.4	5.5	4.2	7.8
ADHD	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Autism	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mental health/developmental delay	3.3	13.7	3.7	4.8	5.2	3.7	4.4
Diabetes	0.2	0.0	0.1	0.1	0.4	0.7	0.2
Seizure	1.3	2.2	0.9	0.6	0.4	0.6	0.7
Sickle cell anemia	0.6	0.8	0.3	0.2	0.2	0.2	0.3
HIV/AIDS	0.2	0.3	0.1	0.1	0.1	0.6	0.1
Injury	15.1	27.7	20.1	15.8	18.4	18.4	18.5

Table 4.13 charts the most prevalent qualifying diagnoses among children in HSCSN. There is substantial concentration in qualifying conditions: Nearly half of enrollees qualify for disability support programs because of either hyperkinetic syndrome or a developmental delay (45 percent); two-thirds of enrollees qualify with these two diagnoses or with mental retardation, cerebral palsy, or pervasive developmental disorder; three-fourths of enrollees have one of the listed conditions or asthma, episodic mood disorder, or emotional disturbance.

Table 4.13
Qualifying Diagnoses Among District Children Enrolled in HSCSN, 2007–2008

Qualifying Diagnosis	Percent
Hyperkinetic	22.9
Developmental delay	22.2
Mental retardation	6.6
Cerebral palsy	6.5
Pervasive developmental disorder (including autism and psychosis)	5.0
Asthma	3.8
Episodic mood disorders	3.7
Emotional disturbance	3.5
Mild mental retardation	2.7
Hearing loss	2.6
Healthy child (foundling)	2.1
Hemolytic anemia (including sickle cell)	2.0
General symptoms (including syncope and convulsions)	2.0
Chromosomal anomaly (including Down's syndrome)	1.9
Preterm/LBW (low birth weight)	1.8
HIV/AIDS	1.7
Conduct disorder	1.6
Adjustment disorder	1.4
Speech disturbance	1.3
Other mental retardation	1.2
Depressive disorder	1.2
Congenital anomaly, nervous system	1.2
Epilepsy/recurrent seizure	1.2

As described, FFS enrollees include disabled and nondisabled children. We lack information in the FFS data about children's qualifying diagnoses (among those who qualify for SSI). Thus, we examine the prevalence among FFS enrollees of the most common qualifying conditions observed among HSCSN enrollees. We also look at the prevalence of high-priority conditions. Among FFS enrollees (Table 4.14), looking at high-priority conditions first, 14 percent of children in the FFS data are observed to have a mental health disorder or developmental delay, 5 percent have asthma, 3.5 percent have ADHD, and 2.2 percent have a seizure disorder. Turning to conditions commonly observed among SSI eligible children in HSCSN, we find that 5.5 percent of children in FFS Medicaid have asthma, 4.4 percent have a speech disturbance, nearly 4 percent have an adjustment disorder, another 4 percent have an episodic mood disorder, and 3.5 percent are hyperkinetic.¹¹

Table 4.14
Condition Prevalence Among Children Enrolled in FFS Medicaid
Who Use Health Care Services, 2007

Condition	Percent
High-priority conditions	
Asthma	5.3
ADHD	3.5
Autism	0.2
Mental health/developmental delay	14.2
Diabetes	0.5
Seizure	2.2
Sickle cell anemia	0.9
HIV/AIDS	0.9
Injury	18.2
Other conditions ^a	
HIV/AIDS	0.9
Hemolytic anemia	1.0
Episodic mood disorders	3.7
Pervasive developmental disorder	0.4
Adjustment disorder	3.7
Depressive disorder	1.7
Conduct disorder	1.8
Emotional disturbance	0.7
Hyperkinetic	3.5
Developmental delay	0.4
Mild mental retardation	0.1
Other mental retardation	0.2
Mental retardation	0.4
Cerebral palsy	0.9
Epilepsy/recurrent seizure	1.0
Hearing loss	2.5
Asthma	5.5
Congenital anomaly, nervous system	0.6
Chromosomal anomaly	0.1
Preterm/LBW (low birth weight)	0.6
General symptoms	6.2
Speech disturbance	4.1

^aThese conditions are prevalent among children in HSCS.

¹¹ Claims data notoriously underestimate the prevalence of health care use related to such "background" conditions as obesity that are not directly related to the visit. We thus excluded obesity from the analysis of conditions using claims data.

4.3.7 Health Conditions: HIV/AIDS

Overall, Washington, D.C. has the highest rate of newly reported cases of AIDS in the country (for all ages combined). In 2006, there were 128.4 cases per 100,000 in the District compared to 14.0 per 100,000 nationally. The mortality rate from AIDS is similarly high, at nearly ten times that of the national mortality rate (44.9 deaths per 100,000 in 2006). The prevalence rate of AIDS in the District has also been higher than rates in comparable cities over the past five years. At the end of 2005, there were 1,386 cases per 100,000 of people living with AIDS in the District, nearly one-third more than in Baltimore and nearly double the rate in New York City (D.C. Department of Health Snapshot of HIV/AIDS, 2007).

In 2007, the District released a comprehensive report on the epidemiology of HIV and AIDS with a follow-up report in 2008 (D.C. Department of Health Snapshot of HIV/AIDS, 2007; D.C. Department of Health HIV/AIDS Epidemiology Update, 2008). These reports gave an overview of trends in HIV and AIDS cases in the District using a number of sources, and made extensive efforts to remove duplicate cases to improve the accuracy and understanding of disease incidence and prevalence in the city. We highlight findings from this report in this section.

While the vast majority of HIV and AIDS cases in the District were among adults over age 20, the number of cases among youth in the District is still troubling. The high rate of adult HIV cases, particularly among women, has an impact on rates of perinatal transmission. The District also had a particularly high rate of progression of HIV to AIDS. Among children under age 13, between 2001 and 2007, 86 percent of newly diagnosed cases of HIV progressed to AIDS within 12 months. Sixty percent of adolescents ages 13–19 progressed from HIV to AIDS within 12 months of their diagnosis during this same time period.

Table 4.15 outlines the prevalence and mortality from HIV and AIDS among youth. Because the incidence, prevalence, and mortality numbers among youth are small, we report number of cases instead of rates, since yearly fluctuations in cases cause large variability in year-to-year rates.

Among adolescents ages 13–19, there were seven new HIV cases in 2006, down from a high of 23 cases in 2004 (some of these differences may have been due to changes in reporting). The number of new AIDS cases among this age group peaked at 13 in 2004, with nine new cases in 2007 (D.C. Department of Health Snapshot of HIV/AIDS, 2007). In 2007, there were 18 cases of persons between the ages of 13 and 19 living with AIDS in the District (D.C. Department of Health HIV/AIDS Epidemiology Update, 2008).

The majority of new HIV cases in adolescents involved sexual transmission; however, in most HIV cases among children under age 13, the disease was acquired in the perinatal period. Between 2001 and 2006, only 35 percent of mothers of children diagnosed with HIV were tested in the prenatal period or at the time of birth, thus affecting the rate of antiretroviral treatment during this time. The numbers of new HIV cases and new AIDS cases among children under age 13 were at a low in 2007, with three new HIV cases and one new AIDS case during that year. Approximately 24 children under age 13 lived with AIDS in the District in 2007 (D.C. Department of Health Snapshot of HIV/AIDS, 2007; D.C. Department of Health HIV/AIDS Epidemiology Update, 2008; Kaiser Family Foundation, 2007).

Table 4.15
Number of HIV and AIDS Cases, 2003–2007

	D.C.					U.S.
	2003	2004	2005	2006	2007	2007*
Persons living with AIDS <13	N/A	N/A	N/A	N/A	24 ^a	914 ^a
Persons living with AIDS 13–19	13 ^c	N/A	N/A	N/A	18 ^d	3,116 ^b
New HIV (not AIDS) cases <13 ^d	7	9	6	3	3	N/A
New HIV (not AIDS) cases 13–19 ^d	21	23	9	7	N/A	N/A
New AIDS cases <13 ^d	4	1	5	2	1	87 ^a
New AIDS cases 13–19 ^d	10	13	8	47	9	558 ^b

SOURCES: ^aKaiser Family Foundation: State Health Facts. ^bCenters for Disease Control. AIDS Surveillance Slides: United States and Dependent Areas. Data are for 2006. Note this source has a different number for Washington, D.C. AIDS cases than that in the D.C. Report, which may be due to updates/changes in the way D.C. calculated numbers or regional reassignment (i.e., some previously attributed cases from Maryland may have originally been assigned to Washington, D.C.). D.C. numbers are therefore from the District of Columbia HIV/AIDS Epidemiology Report. ^cDistrict of Columbia HIV/AIDS Epidemiology Annual Report, 2007. There were some changes between the 2007 and 2008 District reports due to recalculation of the numbers (i.e., some previously attributed cases from Maryland may have originally been assigned to Washington, D.C.). ^dNumbers are from the District of Columbia HIV/AIDS Epidemiology Update 2008, except where otherwise noted.

N/A = not available.

* Numbers for persons ages 13–19 living with AIDS and new AIDS cases, ages 13–19, are from 2006.

4.4 Reproductive Health

4.4.1 Sexual Behavior

Teen sexual behavior has a number of public health implications, including association with school pregnancy, sexually transmitted diseases, and HIV infection. Table 4.16 shows the ten-year trends in sexual behavior among District adolescents, compared to trends in the United States. The top panel focuses on children in grades 9–12, for whom nationally comparable estimates are available; the bottom panel focuses on children in grades 6–8.

Key findings for children in grades 9–12 include the following:

- Although the percentage of youths in grades 9–12 having sexual intercourse has trended downward overall in the past ten years, 58 percent of D.C. youth reported ever having sexual intercourse in 2007, compared to 48 percent of youth in this grade range nationwide.
- Thirteen percent of youths reported ever having intercourse before the age of 13 in 2007. Although this percentage was also lower than the rate seen in prior years, it was still almost double the national rate of reported rates of intercourse before age 13 (7 percent).
- Over 20 percent of teens in grades 9–12 reported having four or more sexual partners.
- The majority (71 percent) of these sexually experienced teens in the District reported condom use, which was higher than nationwide teen condom use (62 percent).
- Only 9 percent of D.C. teens reported birth control pill use (versus 16 percent nationwide).
- Seventy-one percent of District teens reported some form of birth control use (pill, condom, Depo-Provera).

Among children in grades 6–8:

- Over the past ten years, the percentage of youth in middle school who report ever having sexual intercourse has fluctuated between a high of 41 percent in 1997 and a low of 24 percent in 2005. In 2007, 31 percent of middle school students reported ever having had sex.
- Almost 13 percent of youth in grades 6–8 reported having three or more partners.
- Among children who reported being sexually active, almost 80 percent reported using a condom during their last sexual encounter.

Table 4.16
Sexual Behavior Among Youth in Grades 6–12, 1997–2007 (%)

	1997	1999	2001	2003	2005	2007
Grades 9–12						
Ever had sexual intercourse						
D.C.	70.7 ^b	64.8 ^b	—	63.9 ^b	48.1	57.6 ^b
U.S.	48.4	49.9	45.6	46.7	46.8	47.8
Sexual intercourse before age 13						
D.C.	21.3 ^b	20.3 ^b	—	15.0 ^{a,b}	11.1 ^{b*}	13.4 ^b
U.S.	7.2	8.3	6.6	7.4	6.2	7.1
Have had four or more partners						
D.C.	38.2 ^b	29.5 ^{a,b}	—	25.1 ^b	16.1 ^a	21.5 ^{a,b}
U.S.	16.0	16.2	14.2	14.4	14.3	14.9
Condom use ^c						
D.C.	67.9 ^b	74.2 ^b	—	77.5 ^b	76.2 ^b	70.7 ^b
U.S.	56.8	58.0	57.9	63.0 ^a	62.8	61.5
Birth control pill use						
D.C.	7.7 ^b	9.0 ^{b*}	—	11.1 ^b	8.0	9.2 ^b
U.S.	16.6	16.2	18.2	17.0	17.6	16.0
Grades 6–8						
Ever had sexual intercourse	41.3	35.7 ^a	29.2 ^a	32.3	23.6 ^a	30.6 ^a
Sexual intercourse before age 13	21.3 ^b	20.3 ^b	—	15.0 ^{a,b}	11.1 ^{b*}	13.4 ^b
Have had three or more partners	16.8	12.8 ^a	11.4	12.8	9.4 ^a	12.5
Condom use ^c	76.2	78.8	73.8	80.3	81.7	78.0

SOURCE: YRBS and YRBS National Trends in Risks Behaviors.

NOTE: Missing data indicate that survey question was not asked in given year or that weighted estimates are not available.

^a Statistically significant difference between current survey year and preceding survey year, $p < 0.05$.

^b Statistically significant difference between D.C. and U.S., $p < 0.05$.

^c Condom use during last episode of intercourse among those sexually active.

* No nationally comparable data available for students in grades 6–8.

4.4.2 Teen Pregnancy and Births

Teenage pregnancy has a number of adverse public health effects for both the mother and the child. Adolescent parents have a higher rate of poverty and a higher school dropout rate than the general population. In addition, babies born to these parents have a high incidence of low birthweight (Annie E. Casey Foundation, 2003). In 2006, approximately 9 percent of all chil-

dren born to mothers under the age of 20 were of low birthweight (i.e., weighing 2,500 grams or less) (Martin et al., 2009).

Table 4.17 profiles pregnancy rates, live birth rates, fetal death rates, and induced abortion rates in the District and compares them to national rates.

The pregnancy rate for women under age 15 in the District was at a low in 2006, at 2.2 per 1,000 for women (our most recent year of comparison for the United States is 2004, in which the rate for teens under age 15 was 1.6 per thousand; in the same year, it was 3.7 per 1,000 in the District). Teen pregnancy rates for women between the ages of 15 and 19 decreased significantly between 2002 and 2006. The rate per 1,000 women in 2002 was 101.8 and by 2006 it was down to 58.7. (Nationally, in 2004 the teen pregnancy rate was 72.2 per 1,000 women; this same year in the District it was 79.4 per 1,000 women.) The rate of induced abortions for women between the ages of 15 and 19 in the District fluctuated quite a bit from year to year, with a peak rate occurring in 2003 (34 per 1,000). In 2006, the abortion rate among girls in this age range was 10 per 1,000. Among girls under age 15, the abortion rate was much lower, with 0.6 abortions per 1,000 in 2006.

In the District, the live birth rate for teens is higher than the national average. Among teens younger than 15, the live birth rate in 2006 was 1.5 per 1,000 women compared to 0.7 per 1,000 women nationally (2004 numbers). Among women ages 15–19, the live birth rate in 2006 was 48.3 per 1,000 women, also higher than national rates. As a correlate, the fetal death rate among women ages 15–19 in the District was 0.5 per 1,000, lower than the national rate.

Table 4.17
Pregnancies, Live Births, Fetal Deaths, and Induced Abortions Among District Youth, 2002–2007 (%)

	D.C.						U.S.
	2002	2003	2004	2005	2006	2007	2004
Pregnancies per 1,000 women age <15	2.6	2.7	3.7	3.1	2.2	N/A	1.6
Pregnancies per 1,000 women ages 15–19	101.8	99.7	79.4	64.4	58.7	N/A	72.2
Live births per 1,000 women age <15	1.4	1.8	1.5	1.4	1.5	N/A	0.7
Live births per 1,000 women ages 15–19	68.9	65.2	66.8	42.1	48.3	N/A	41.1
Fetal deaths per 1,000 women age <15	0	0.1	0	0.1	0.1	N/A	0.2
Fetal deaths per 1,000 women ages 15–19	0.3	0.5	0.9	0.4	0.5	N/A	11.3
Induced abortions per 1,000 women age <15	1.2	0.9	2.2	1.7	0.6	N/A	0.7
Induced abortions per 1,000 women ages 15–19	32.3	34.0	11.7	21.9	9.9	N/A	19.8

SOURCE: D.C. Department of Health, Reported Pregnancies and Pregnancy Rates, District of Columbia, 2002–2006. September 2008. Most recent year of available data is 2006.

NOTE: N/A = not available.

4.4.3 Sexually Transmitted Infections

The rates of sexually transmitted infections (STIs) have fluctuated for teens ages 10–14 from year to year, with rates of gonorrhea, chlamydia, and syphilis all above national rates (Table 4.18). Rates of gonorrhea among youth ages 15–19 have also fluctuated; in 2007, the rate was

16.4 per 1,000, which is more than three times the national rate that same year (4.6 per 1,000). Chlamydia rates among teens ages 15–19 have increased, with a significant jump between 2006 and 2007 to 56 per 1,000, which is also more than three times the national rate of 17.8 per 1,000 that year. Syphilis rates are much lower than rates of gonorrhea and chlamydia in teens of all ages both in D.C. and nationally. Because data are generated by actual culture-positive reports made to the Department of Health, these numbers may underestimate the actual prevalence of STIs when teens are treated clinically without cultures.

Table 4.18
Sexually Transmitted Infections Among District Youth, 2002–2007 (%)

	D.C.						U.S.
	2002	2003	2004	2005	2006	2007	2007
Gonorrhea rate per 1,000, ages 10–14	1.6	1.7	1.8	0.8	0.9	1.1	0.2
Chlamydia rate per 1,000, ages 10–14	2.7	3.6	3.3	3.3	2.0	3.8	0.6
Syphilis rate per 1,000, ages 10–14	0.0	0.0	0.0	0.0	0.0	0.4	0.01
Gonorrhea rate per 1,000, ages 15–19	16.1	17.0	17.5	14.7	12.6	16.4	4.6
Chlamydia rate per 1,000, ages 15–19	31.4	31.2	33.8	34.9	31.4	56.0	17.8
Syphilis rate per 1,000, ages 15–19	0.3	0.3	0.2	0.2	0.2	0.1	0.03

SOURCES: D.C.: Department of Health, STD Control Program. Raw numbers were converted to rates per 1,000 using the U.S. Census and Population estimates for the reference year and age range. U.S.: CDC, STDs in Adolescents and Young Adults.

4.5 Youth Violence

Youth violence is thought to be the product of a combination of factors, including neighborhood opportunities, learned violence and abuse from the family, and exposure to negative peer influences (Elliott, 1994). Regardless of the contributory causes, youth violence, particularly when it starts in adolescence, is associated with substance abuse, early sexual activity, and a trajectory of continued violence into adulthood (U.S. Surgeon General, 2001). Violence occurring in the school setting has also been associated with higher rates of trauma and injury as well as depression and anxiety in youth (Centers for Disease Control and Prevention, 2008).

We present rates of violence among teens in grades 9–12 in Table 4.19. In 2007, 43 percent of D.C. teens in grades 9–12 reported being in a fight in the prior year, with 20 percent of teens having a fight on school property (versus 36 percent and 12 percent, respectively, nationwide). Twenty-one percent of teens in the District reported carrying a weapon and 7 percent reported carrying a weapon in school, which is slightly above the national rate.

School violence has also had a psychological impact on teens. Fourteen percent of District high school students reported not going to school due to safety concerns (versus the U.S. rate of 6 percent). This high rate of violence also extends to sexual and date-related activity. Youth dating violence (grades 9–12) in the District rose from 11 percent in 2005 to 17 percent in 2007 and was significantly higher than the national rate of 10 percent. Almost 9 percent of youth in the city reported experiencing rape or forced sex in the past.

Table 4.19
Violence and Safety Among Youth in Grades 9–12, 1997–2007 (%)

	1997	1999	2001	2003	2005	2007
In a fight during past year						
D.C.	39.4	36.9	—	38.0	36.3	43.0 ^{a,b}
U.S.	36.6	35.7	33.2	33.0	35.9	35.5
In a fight on school property at least once in prior 12 months						
D.C.	19.2 ^b	18.2 ^b	—	15.2	16.4 ^b	19.8 ^b
U.S.	14.8	14.2	12.5	12.8	13.6	12.4
Involved in dating violence						
D.C.	—	13.7 ^b	—	16.0 ^b	11.2 ^a	17.1 ^{a,b}
U.S.	—	8.8	9.5	8.9	9.2	9.9
Experienced rape/forced sex						
D.C.	—	—	—	11.9 ^a	5.4 ^{a,b}	8.8 ^a
U.S.	—	—	7.7	9.0	7.5	7.8
Carried a weapon at least once in prior 30 days						
D.C.	31.8 ^b	20.8 ^a	—	25.0 ^b	17.2 ^a	21.3
U.S.	18.3	17.3	17.4	17.1	18.5	18.0
Carried a weapon to school at least once in prior 30 days						
D.C.	16.4 ^b	8.9 ^a	—	10.6 ^b	6.7 ^{a,b}	7.4
U.S.	8.5	6.9	6.4	6.1	6.5	5.9
Did not go to school due to safety concerns at least once in prior 30 days						
D.C.	10.8 ^b	19.4 ^{a,b}	—	14.0 ^a	8.9 ^a	14.4 ^{a,b}
U.S.	4.0	5.2	6.6	5.4	6.0	5.5

SOURCE: YRBS. Missing data indicate that survey question was not asked in given year or that weighted estimates were not available.

^a Statistically significant difference between current year and prior year reported, $p < 0.05$.

^b Statistically significant difference between D.C. and United States, $p < 0.05$.

NOTE: Point estimates should be interpreted with caution because the confidence intervals around them are sufficiently wide and were created based on the sampling distribution of each mean. This may help to explain the movement up or down from year to year. The sample sizes were on average 1,780 per year for high school, and 1,720 for middle school.

The percentage of middle school students who reported ever being in a fight was approximately 76 percent in 2007 (Table 4.20). About 37 percent of youth in this same grade range reported ever carrying a weapon. Over 20 percent of middle school students stated they had been bullied two or more times in the prior year.

Table 4.20
Violence and Safety Among Youth in Grades 6–8, 1997–2007

	1997	1999	2001	2003	2005	2007
Ever been in a fight	75.1	76.4	72.0	75.2	64.2 ^a	76.2 ^a
Ever carried a weapon	47.1	35.1 ^a	30.8	34.8	32.6	36.8
Bullied two or more times in past year	—	—	—	—	—	21.1

SOURCE: YRBS. Missing data indicate that survey question not asked in given year or that weighted estimates are not available. U.S. comparison data are not available.

^a Statistically significant difference between current year and prior year reported, $p < 0.05$.

4.6 Youth in the Child Dependency and Juvenile Justice Systems

Children who are victims of abuse or who are in foster care have a number of special health needs that place them at particularly high risk for adverse outcomes. It has been reported that over 20 percent (with some estimates as high as 60 percent) of children under age 5 who are in the foster care system are developmentally delayed (Pecora et al., in press). Frequent placement, the threat of rejection by foster parents or siblings, and the stigma of being in foster care can exacerbate or contribute to behavioral or emotional issues in foster children.

Washington, D.C. has a higher rate of children living in foster settings and children awaiting adoption than the national average. Although the rate of District children living in foster settings has decreased from 28.4 per 1,000 in 2002 to 20.7 per 1,000 in 2007, it is still much higher than the national rate, which was 6.9 per 1,000. The rate of children waiting to be adopted decreased from 10 per 1,000 in 2002 to 5.4 per 1,000 in 2006, compared to the national rate of 1.9 per 1,000. The average length of stay in foster care is two years, with over 50 percent of children staying a year or longer (Pecora et al., in press). A report released in May 2009 showed that more than 60 percent of children in the D.C. foster system have been there for over two years and more than 5 percent have been in the system for over five years (Alexander, 2009).

A large fraction of children are placed in foster care because of prior abuse. In 2006, of the 1 million confirmed cases of child abuse or neglect in the United States, approximately one-fifth of the children involved were placed in foster care. These children have additional mental health risks, including higher risk for depression, behavioral issues, and attention deficit disorder (Shipman and Taussig, 2009). These behavioral health needs often require additional services including access to mental health specialists, school-based health services and coordination of care.

States have differing rates of substantiating abuse guided by individual jurisdiction, which could potentially influence comparisons to national averages. A report of suspected abuse is initially screened to determine whether it meets the standards for further evaluation according to state law. Those cases that are screened as suspicious are then further investigated for credibility. In D.C., reports of abuse are investigated by the Department of Child and Family Services and the Metropolitan Police Department. Of 5,644 cases reported in 2006, 90 percent (5,077) were screened in to meet the District's standard meriting investigation, which is higher than the national average of 61 percent. Of those 5,077 cases, 1,717 were substantiated as confirmed cases of abuse. Because an investigation often involves multiple children, a single report may determine that there are multiple child victims of abuse (U.S. Department of Health and Human Services, Division of Children and Families, 2006).

The national rate of confirmed cases of abuse is shown in Table 4.21. The rate of abuse per 1,000 children (under age 18) in the District initially declined from 2002 (26 per 1,000) to 2004 (20.4 per 1,000), but by 2006 it had increased to 24 per 1,000 children. The 2006 rate of child abuse in the District was twice the national average of 12 per 1,000 population.¹² The most common type of abuse reported was neglect (58 percent of cases), followed by physical abuse (15 percent). About 8 percent of all victims had some type of behavioral, or emotional disability, which is consistent with the national average (U.S. Department of Health and Human Services, Division of Children and Families, 2006).

¹² Abuse cases are defined as those investigated and substantiated by the D.C. Child and Protective Services Agency.

Children who experience abuse or who have placement instability in the foster care system have a higher risk of juvenile delinquency (Ryan and Testa, 2005). As a result, many may end up in the juvenile justice system, most commonly through interactions with law enforcement. About 70 percent of juvenile arrest cases are referred to juvenile court intake, where the decision is made whether to formally process the case in the court system (Snyder and Sickmund, 2006).

Juvenile justice centers can be grouped into detention centers, where youths are placed prior to being tried for a conviction, and correctional centers, where youths who have been convicted of a crime are assigned. It has been estimated that as many as 65 percent of youth in the juvenile justice system have diagnosable mental health conditions. In some cases, youth are placed in short-term detention centers solely for mental health treatment rather than for any particular offense. Often, however, there are insufficient resources in detention centers to adequately address the mental health issues of juveniles in the system (Desai et al., 2006).

In recognition of the high costs associated with placing youths in incarceration, the District, along with several other jurisdictions, has adopted a number of alternative pathways to traditional detention for youth offenders. With a grant from the Annie E. Casey foundation, the District, through its Juvenile Detention Alternatives Initiative (JDAI) program, has developed a number of sites other than secure detention centers for youths in the juvenile justice system. Using the risk assessment index (RAI), a youth's risk of flight or of committing a repeat offense during the interim period between arrest and trial can be calculated. Low- and medium-risk youth will often be released to their home or placed in alternative facilities within the community. These include group residential homes as well as a number of community-based monitoring programs that provide additional supportive services such as counseling and mentoring (Criminal Justice Coordinating Council, 2007).

Housing youth in detention centers is not only costly (an estimated annual cost of \$32,000 to \$65,000 per youth incarcerated) but is also associated with a greater suicide risk among youth who are already at higher than average rates of mental illness (Criminal Justice Coordinating Council, 2007). Youth detainees have a fourfold increase in the rate of suicide compared to the general public (Coalition for Juvenile Justice). The number of youth under the age of 21 residing in juvenile detention centers in 2006 was much higher in the District compared to the national average (6.7 per 1,000 youth in the District living in detention settings compared to 3 per 1,000 nationally; see Table 4.21).

Table 4.21
Child Maltreatment, Juvenile Dependency, and Juvenile Detention Among District Youth, 2002–2006

	Rate per 1,000					
	D.C.					U.S.
	2002	2003	2004	2005	2006	2006
Children under age 18 in the foster system ^a	28.4	26.6	22.6	21.7	20.7	6.9
Children under age 18 waiting to be adopted ^a	10.0	9.7	6.7	5.3	5.4	1.9
Children under age 18 who were victims of abuse ^b	26.0	21.6	20.4	24.5	24.0	12.0
Youth under age 21 living in juvenile detention	N/A	6.3	N/A	N/A	6.7	3.0

SOURCES: ^a U.S. Department of Health and Human Services, Adoption Care Reporting and Analysis System. Raw numbers divided by Census bureau estimates of children less than age 18 for the reference year.

^b U.S. Department of Health and Human Services, Child Maltreatment 2006 report.

NOTE: N/A = not available.

4.7 Mortality

Violence is one of the key causes of mortality in youths, particularly among adolescents. The overall child mortality rate in the District (for children ages 0–23) increased 20 percent from 2003 to 2007 (from 75 per 100,000 deaths in 2003 to over 90 per 100,000 deaths in 2007). In 2007, the majority of child fatalities occurred in children less than age one (61 percent) and of these deaths, over 70 percent died in the first 28 days of life. Most of these infants were born either prematurely or with low birthweight (under 1,500 grams) (D.C. Child Fatality Review Committee, 2007). The D.C. mortality rate for this population (< age 1) was significantly higher than the national average mortality rate (2006 U.S. data show 6.9 per 1,000 versus 11.3 per 1,000 in D.C.). (See Table 4.22.)

Of all deaths among children and young adults ages 0–23, about 13 percent (21 cases) occurred among youths who were inside the juvenile justice system at some point in the two years prior to their death. Half (10 cases) of these deaths were in youths with active cases within the system. All but one of the cases of death were due to acts of violence, with 81 percent from homicides. These children all had histories of violent offenses in the prior two years (D.C. Child Fatality Review Committee, 2007).

Twenty-eight percent of all deaths in young adults were in children who were in the child welfare system within 4 years of their death. About a fourth of these children (23 percent) had active cases within the child welfare system, with neglect as the most common cause of child welfare involvement. Most of these children died from either natural causes (20 out of 44 cases) or homicides (14 out of 44 cases) (D.C. Child Fatality Review Committee, 2007).

Table 4.23 shows mortality by cause and ward. For children ages 0–23, natural or medical causes accounted for the majority of cases, with 65 percent of fatalities (103 of 159 deaths) in this age group caused by a medical condition; most of these deaths occurred in infants due

Table 4.22
Mortality Rate over Time by Age and At-Risk Population, 2003–2007

	D.C.					U.S.
	2003	2004	2005	2006	2007	2006
Age <1 (per 1,000 live births)	10.2	11.8	13.6	11.3	13.1	6.9
Ages 1–14 (per 100,000)	21.9	36.7	23.7	25.2	26.7	19.1
Ages 15–23 (per 100,000)	57.0	69.0	61.3	52.0	48.6	91.6
Total Fatalities (per 100,000)	75.0	88.2	87.4	89.2	90.8	75.2
Child welfare fatalities, as a percentage of all deaths among children and adolescents, n (%)	34 (26%)	58 (37%)	56 (36%)	59 (38%)	44 (28%)	
Juvenile justice system fatalities, as a percentage of all deaths among children and adolescents, ^a n (%)	17 (13%)	35 (23%)	29 (19%)	28 (15%)	21 (13%)	

SOURCES: Infant mortality data from D.C. Department of Health 2007 Infant Mortality Report.

NOTES: Mortality data for ages 1–23, as well as child welfare and deaths in juvenile justice system from the District of Columbia Child Fatality Review Committee Annual Reports 2003–2007. Rates calculated by dividing denominator from census estimates for corresponding year. Child Fatality Review Committee numbers, however, are slightly different from those numbers reported on the D.C. DOH website. U.S. rates from CDC, National Vital Statistics Reports. Deaths: Preliminary Data for 2006. Numbers divided by population for age group from census. gov.

U.S. rates are for ages 15–24 and total age for ages 0–24.

^a Children known to child welfare system within four years of death and children known to juvenile justice system within two years of death.

to prematurity. The second most common cause of death in children was violence (homicide, accidents, suicides, abuse), with 24 percent (38 out of 159) of all deaths due to this cause. The majority of violent deaths (84 percent or 32 cases) were homicides in older youth ages 18–20; five percent (2 cases) of violent deaths were due to abuse of children ages 1 and 2.

Nearly one-fourth of all children who died in D.C. in 2007 were residents of Ward 8, and a majority of those deaths were attributed to infant mortality (40 percent). Ward 8 residents also had the highest numbers of deaths from homicides and accidents among youth in the District. The fewest recorded deaths for children under age 23 were in Ward 3, with three deaths occurring in 2007, accounting for 1 percent of the total.

Table 4.23
Mortality Among Youth Ages 0–23, 2007

	No.	Percentage of Deaths by Ward of Residence							
		1	2	3	4	5	6	7	8
Natural or medical (0–23)	103	27.7	22.5	41.3	25.4	16.2	10.1	15.7	10.7
Homicide (0–23)	36	23.7	24.0	0.0	7.3	18.5	14.3	19.6	11.5
Accident (0–23)	9	0.0	0.0	0.0	14.5	24.6	43.0	22.5	5.1
Suicide (0–23)	1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	46.1
All causes (0–23)	159	24.9	21.4	28.3	20.1	19.3	14.7	19.7	11.2
Infant mortality (<1)	97	23.7	32.1	30.4	32.7	21.5	17.9	22.5	15.4

SOURCE: Child Fatality Review Committee 2007 Annual Report. Rates for all other ages calculated from raw numbers in the report divided by standard census estimates for the population in D.C. for 2007 from Census.gov.

4.8 Summary

This chapter presents findings related to the health insurance, sociodemographic, and health characteristics of District children. In the following subsection, we highlight key findings.

Sociodemographic Characteristics

- Most children in the District have health insurance, and most are enrolled in Medicaid managed care or Medicaid fee-for-service. Approximately 3,500 children are enrolled in the Health Services for Children with Special Needs (HSCSN) plan.
- While the rate of children in poverty has declined since 2003, the percentage of children who live in poverty in the District is still much higher than the national percentage.
- The high school dropout rate improved from 2002 to 2007, and now the rate is consistent with the national average (about 7–8 percent).
- The number of youth in juvenile detention centers is more than twice the national rate.
- There are far more children in the foster care system in the District compared to the nation (20.7 per 1,000 in 2006 versus 6.9 per 1,000 in the United States). Rates of child abuse and neglect are twice the national average.

General Health and Chronic Health Conditions

- The reported health status of children improved from 2003 to 2007, with only 2.3 percent of parents reporting that their children are in poor or fair health. Dental health remained steady from 2003 to 2007, with 8.8 percent reporting poor or fair dental health in 2007. Health status varies by ward: Ward 1 reported the poorest overall child health and Wards 1, 7, and 8 reported the poorest dental health.
- More children in the District reported at least one chronic health condition (19.3 percent) compared with the U.S. average (15.2 percent).
- Overweight and obesity continue to be an issue in the District. The rates are comparable between the city and the nation, as reported by parents in the NSCH; based on child report in the YRBS, however, a greater percentage of youth are overweight in the District than in the nation (18 percent versus 13 percent). Further, children in the District engage in less regular exercise than do children nationally, a problem that is more common in Wards 1, 6, 7, and 8.
- Eight percent of children in Medicaid or Alliance managed care and 5 percent of children in FFS Medicaid have asthma. Asthma is one of the top 10 most prevalent qualifying conditions among HSCSN children.
- Other prevalent health conditions among children in Medicaid or Alliance managed care plans are injury (19 percent) and mental health conditions or developmental delays (4 percent).
- Among children in the fee-for-service Medicaid program, common conditions include injury (18 percent) and mental health disorders or developmental delays (14 percent).
- Among children enrolled in HSCSN, nearly half qualify for disability support programs because of either hyperkinetic syndrome or a developmental delay (45 percent); two-thirds qualify with these two diagnoses or with mental retardation, cerebral palsy, or pervasive developmental disorder; three-fourths have one of the listed conditions or asthma, episodic mood disorder, or emotional disturbance. Nearly 40 percent of the qualifying diagnoses for HSCSN are mental health disorders.

Mental Health and Substance Use

- Rates of mental health issues, such as depression and anxiety, are comparable to national numbers, but the rate of current learning disabilities and problematic behaviors (conflict, disobedience) is much higher in the District compared with the United States. Approximately 9 percent of children in the District have an early intervention plan for their developmental or health problem.
- Rates of illicit drug use (heroin, injection drugs) are higher in the District than in the nation (5 percent versus 2 percent). However, the use of cigarettes and alcohol is less common among District youth.

Sexual and Reproductive Health

- The District has the highest rate of newly reported cases of AIDS in the country. Among children under age 13, 86 percent of new HIV cases progressed to AIDS within one year.

Sixty percent of cases among those ages 13–19 progressed to AIDS within one year of diagnosis.

- Sexual and reproductive health issues are a significant problem among District youth, particularly the percentage reporting sex before age 13 (13 percent). Chlamydia and gonorrhea rates are high as well—nearly three times the national average. Overall, the teen pregnancy rates decreased steadily in the District between 2002 and 2007.

Youth Violence and Mortality

- Youth violence is also higher than national rates. More youth in the District report feeling unsafe in school (14 percent) than in the nation (6 percent). Dating violence increased from 11 percent in 2005 to 17 percent in 2007 and is significantly higher than the U.S. rate of 10 percent.
- Natural and medical causes are the main reason for deaths among children and young adults (0–23 years) (65 percent). Violence is another key contributor to mortality among adolescents in the District. Thirteen percent of deaths for children and young adults (0–23 years) occurred among those who were in the juvenile justice system in the two years prior to their death. Ward 8 has the highest rate of violence-related deaths in the District.

Use of Health Care Among District Children

Chapters 5, 6, and 7 profile use of health care among District youth. In Chapter 5, we describe use of health care services among all District youth, regardless of the type of children’s insurance coverage, using data from the NSCH (2003 and 2007) to describe use of office-based services, and D.C. Hospital Association (DCHA) hospital discharge data from 2000 to 2007 to describe use of hospital-based care among District youth.

Section 5.1 describes use of office-based care among District youth. We profile trends over time among District youth from 2003 to 2007 and compare estimates for the District to national estimates. Sections 5.2 and 5.3 describe use of hospital-based care among District youth. In Section 5.2, we first describe conditions associated with inpatient hospitalizations and then analyze “ambulatory care–sensitive” (ACS) inpatient hospitalizations. Section 5.3 follows the same structure but for ED use: We first describe conditions associated with ED visits and then describe patterns of ACS-ED visits. ACS inpatient (ACS-IP) hospitalizations and ED (ACS-ED) visits are those that may be preventable with timely access to high-quality primary care. A large body of evidence suggests that ACS admissions are a reflection of access to and quality of primary care. As such, ACS rates have been used as indicators of the availability and effectiveness of the primary care system. We describe methods used in these analyses in Appendix G.

Chapters 6 and 7 also provide analyses of inpatient and ED use among District youth, although those analyses pertain to publicly insured youth only. However, the analyses build on those in this chapter. In particular, the analyses in Chapter 6 look at rates of hospital use during the course of a year among particular individuals, repeated hospital use, and the interaction between use of hospital-based care and use of office-based care.¹

5.1 Use of Office-Based Care Among District Youth, 2003 and 2007

Table 5.1 describes use of office-based care among District youth and compares 2007 estimates to 2003 estimates for D.C. as well as to 2007 estimates for the nation. Table 5.2 provides selected estimates of use of office-based care by ward.

¹ These analyses of repeated hospital use are beyond the scope of what can be done with the DCHA data because DCHA data lack an individual identifier and capture only hospital-based care.

Table 5.1
Medical Home Prevalence and Use of Office-Based Health Care Among Children in the District and the Nation, 2003 and 2007

	D.C. (2007)	D.C. (2003)	U.S. (2007)
Has a medical home	91.8 (89.8–93.7)	80.2** (77.8–82.5)	92.2 (91.7–92.7)
Had a well-child visit during last 12 months	97.6* (96.5–98.6)	87.6** (85.7–89.6)	88.5 (88.0–89.0)
Ages 0–5	98.7* (97.3–100)	90.0 (86.9–93.1)	96.0 (95.5–96.5)
Ages 6–12	97.8* (96.4–99.2)	87.4** (84.3–90.5)	85.4 (84.5–86.3)
Ages 13–17	95.5* (92.7–98.3)	84.5** (80.4–88.7)	84.0 (82.9–85.2)
Had a preventive dental visit during last 12 months	74.6 (71.8–77.3)	71.3** (68.7–74.0)	74.0 (73.3–74.8)
Ages 0–5	44.5 (39.4–49.7)	51.4** (47.2–56.7)	44.7 (43.3–46.2)
Ages 6–12	94.4* (91.6–97.2)	83.0** (79.5–86.5)	89.7 (88.7–90.6)
Ages 13–17	90.8 (86.9–94.7)	75.9** (70.9–80.8)	87.2 (86.1–88.3)
Problem seeing a specialist during last 12 months	12.3* (7.8–16.9)	15.5 (10.6–20.4)	7.9 (7.1–8.7)

SOURCE: Authors' analyses of NSCH data.

NOTE: 95% confidence intervals in parentheses.

* Statistically significant difference from 2007 U.S. mean at .05 level.

** Statistically significant difference from 2007 citywide mean at .05 level.

5.1.1 Medical Home

One of the U.S. Department of Health and Human Services' Healthy People 2010 objectives is to increase the proportion of children who have a specific source of ongoing care (USDHHS, 2000). In pediatrics, a key concept is the "medical home" where medical care is "accessible, continuous, comprehensive, family-centered, coordinated, compassionate, and culturally effective" (American Academy of Pediatrics, 2004). As shown in Table 5.1, in 2007, 91.8 percent of children in the District reported having a medical home, where the personal doctor or nurse knew the child's health history well. This represents a significant increase over 2003 (80.2 percent). However, children in low-income households² were less likely to have a medical home (87.1 percent) than those with higher incomes (95.6 percent). Households were also asked where they usually go for the child's sick care (data not shown). Most went to a doctor's office (62.6 percent) or clinic (27.6 percent), others to a hospital outpatient department (7.1 percent) or a hospital emergency room (3.4 percent) (not shown). Very few children (fewer than 1 percent) indicated going to a school clinic for usual care.

² Incomes at or below 200 percent of the federal poverty level.

5.1.2 Well-Child Care

Table 5.1 also shows that more children in D.C. had preventive medical care, such as a physical exam or well-child visit, in 2007 than in 2003. In 2007, 97.6 percent of children were reported to have had such a visit, compared to 87.6 percent in 2003. Furthermore, there were no significant differences by household income (data not shown). Rates were higher for younger children compared to older children. For all age groups, the rate for the District was significantly higher than the national rate.

5.1.3 Preventive Dental Care

The NSCH reflects a small but statistically significant increase in the proportion of children receiving preventive dental care, such as a check-up or dental cleaning, with the proportion rising from 71.3 percent to 74.6 percent between 2003 and 2007. However, the rate decreased among District children ages 0–5. The 2007 rate in D.C. was not significantly different from the U.S. average. As with preventive medical care, there were no significant differences by household income in preventive dental care (data not shown).

5.1.4 Specialty Care

We compared rates of use of specialty care and mental health care among District children to rates among children nationwide. We found that the rates were comparable: Approximately 22 percent of District children and children nationwide had at least one specialist visit in the previous 12 months and between 8 and 9 percent had a mental health visit. However, the rates of specialty and mental health care use are not adjusted for *need*. A more telling measure is the percentage of parents who report that obtaining specialist care for a child who needed it was a problem. In the District, 12.3 percent of parents reported that getting needed specialist care was a “big problem,” and the proportion was significantly higher for low-income families (19.1 percent) than for higher-income children (7.0 percent). Further, the District’s rate was significantly higher than the rate nationwide (7.9 percent).

Table 5.2 summarizes the variability in medical home prevalence and use of office-based care among District children by location of residence (ward). Key findings include the following:

- Children in Wards 7 and 8 are less likely to have a medical home and are less likely to receive specialty health care.
- Children in Ward 7 experienced substantially greater problems accessing specialists (32 percent reported difficulty, compared to 12 percent District-wide).
- In contrast, children in Ward 3 were more likely to have a medical home, received more preventive and specialty care, and were less likely to experience problems accessing specialists than the average child in D.C.
- Children in Wards 1, 2, and 3 were least likely to have a preventive dental visit.

Table 5.2
Health Care Use Among District Children, by Ward, 2007 (%)

	D.C.	Ward							
		1	2	3	4	5	6	7	8
Medical home	91.8	91.4	93.6	97.8*	94.0*	92.8	90.6	88.7*	89.2*
Well-child visit	97.6	94.6*	97.1	98.6	98.7*	97.9	98.0	95.8	99.1*
Preventive dental visit	74.6	69.1*	67.2*	69.5*	75.6	80.3*	76.0	76.0	74.2
Specialist visit ^a	21.8	26.1*	29.6*	40.4*	20.9	22.8	26.1*	16.3*	12.6*
Problem seeing a specialist	12.3	16.2	15.4	7.3*	6.7*	5.3*	3.3*	31.5*	18.1

SOURCE: Authors' analyses of NSCH.

* Statistically significant difference from 2007 D.C. mean at .05 level.

^a Excluding mental health visits.

5.2 Inpatient Hospitalizations Among District Youth

We first describe conditions associated with inpatient hospitalizations and then turn to analyses of ACS-IP hospitalizations. As described, inpatient hospitalizations (and ED visits—see section 5.3) can be classified according to whether or not they may be preventable with timely access to high quality primary care. ACS rates have been used as indicators of the availability and effectiveness of the primary care system.

In Table 5.3, we classify inpatient discharges according to a high-level clinical grouping scheme (two-digit clinical classification code). For youth 0–4, the top two clinical categories

Table 5.3
High-Level Clinical Classification for Youth Inpatient Discharges, 2007

Clinical Classification*	Percent of Inpatient Hospitalizations (by age)			
	0–4	5–13	14–17	18–24
[01] Infectious and parasitic diseases	4.1	2.6	1.9	2.0
[02] Neoplasms	1.2	2.6	1.1	0.8
[03] Endocrine; nutritional; and metabolic diseases and immunity disorders	3.9	3.5	1.6	1.9
[04] Diseases of the blood and blood-forming organs	1.5	8.0	4.7	3.8
[05] Mental illness	0.0	13.8	13.1	9.1
[06] Diseases of the nervous system and sense organs	6.8	6.6	3.3	2.3
[07] Diseases of the circulatory system	1.4	1.4	1.2	1.6
[08] Diseases of the respiratory system	32.3	21.6	5.9	2.6
[09] Diseases of the digestive system	7.6	9.2	7.4	5.8
[10] Diseases of the genitourinary system	2.9	2.9	2.4	2.3
[11] Complications of pregnancy; childbirth; and the puerperium	0.0	0.8	37.6	56.0
[12] Diseases of the skin and subcutaneous tissue	4.9	3.9	3.9	1.4
[13] Diseases of the musculoskeletal system and connective tissue	0.6	3.6	2.4	1.1
[14] Congenital anomalies	5.6	2.6	0.8	0.1
[15] Certain conditions originating in the perinatal period	15.4	0.0	0.0	0.0
[16] Injury and poisoning	6.5	13.0	11.7	7.9
[17] Symptoms; signs; and ill-defined conditions and factors influencing health status	4.7	3.4	0.9	1.3
[18] Residual codes; unclassified; all E codes	0.5	0.5	0.0	0.1
Total	100.0	100.0	100.0	100.0

* Based on the Agency for Healthcare Research and Quality (AHRQ) Clinical Classification Software (CCS).

associated with inpatient hospitalizations are diseases of the respiratory system and conditions originating before birth. For youth 5–13, diseases of the respiratory system and mental illness predominate, followed by injury and poisoning. Among older youth 14–17 and young adults 18–24, pregnancy-related hospitalizations, mental illness, and injury or poisoning are most common.

Table 5.4
Specific Clinical Conditions Associated with Inpatient Hospitalizations Among District Youth, by Age Group, 2007

Condition	No.	%
Ages 0–4		
Total hospitalizations	2,066	100.0
[08.01] Respiratory infections	402	19.5
[08.03] Asthma	218	10.6
[15.07] Other perinatal conditions	200	9.7
[12.01] Skin and subcutaneous tissue infections	99	4.8
[17.01] Symptoms; signs; and ill-defined conditions	87	4.2
[06.04] Epilepsy; convulsions	74	3.6
Ages 5–13		
Total hospitalizations	1,095	100.0
[08.03] Asthma	173	15.8
[05.08] Mood disorders	89	8.1
[04.01] Anemia	79	7.2
[08.01] Respiratory infections	51	4.7
[16.02] Fractures	50	4.6
[09.06] Lower gastrointestinal disorders	43	3.9
[05.03] Attention deficit	42	3.8
[06.04] Epilepsy; convulsions	39	3.6
[12.01] Skin and subcutaneous tissue infections	34	3.1
Ages 14–17		
Total hospitalizations	1,267	100.0
[11.03] Complications mainly related to pregnancy	156	12.3
[11.05] Complications during labor	144	11.4
[05.08] Mood disorders	121	9.6
[11.06] Other complications of birth; puerperium affecting management of mother	108	8.5
[04.01] Anemia	58	4.6
[16.02] Fractures	48	3.8
[11.04] Indications for care in pregnancy; labor; and delivery	48	3.8
[12.01] Skin and subcutaneous tissue infections	44	3.5
[09.06] Lower gastrointestinal disorders	43	3.4
Ages 18–24		
Total hospitalizations	4,948	100.0
[11.03] Complications mainly related to pregnancy	879	17.8
[11.05] Complications during labor	726	14.7
[11.04] Indications for care in pregnancy; labor; and delivery	511	10.3
[11.06] Other complications of birth; puerperium affecting management of mother	451	9.1
[05.08] Mood disorders	203	4.1
[04.01] Anemia	181	3.7
[11.07] Normal pregnancy and/or delivery	172	3.5
[05.10] Schizophrenia and other psychotic disorders	153	3.1

*Diagnoses representing at least 3 percent of hospitalizations included. Specific diagnostic classifications based on AHRQ CCS.

Table 5.4 provides a breakdown of inpatient hospitalizations using a more detailed condition grouping. Among children ages 0–4, 10.6 percent of inpatient hospitalizations were associated with asthma, and nearly 16 percent of hospitalizations among those ages 5–13 were for the same condition. Mood disorders were the second most common specific diagnostic category among youth 5–13 and the third most common among youth 14–17, accounting for 8.1 and 9.6 percent of IP hospitalizations, respectively. Among young adults, mood disorders accounted for 4.1 and schizophrenia for 3.1 percent of IP hospitalizations. Fractures were the most common specific injury resulting in hospitalization among youth 5–17. Finally, anemia was a key condition associated with inpatient hospitalizations among District youth, accounting for 7.2, 4.6, and 3.7 percent of hospitalizations among those 5–13, 14–17, and 18–24, respectively.

According to AHRQ, respiratory diseases represent three of the top ten reasons children and adolescents nationally are hospitalized when admitted for illness (AHRQ, 2003). Nationally, asthma and acute bronchitis account for 7 percent of hospital stays for children and adolescents, and pneumonia for 8 percent. Respiratory diseases, such as asthma and pneumonia, are significant causes of hospitalization for the younger age groups (children 1–2, 3–5, and 6–12). Affective and mental disorders are the most common cause of hospitalization for those ages 13–17, though injuries (such as leg fractures, medication poisonings, and head injuries) were also significant.

Turning to ACS inpatient hospitalizations, Table 5.5 and Figure 5.1 profile changes in ACS-IP rates over time from 2000 to 2007 for specific age groups of District children. The most dramatic changes were among children 0–4. From 2001 to 2004, ACS rates for children ages 0–4 fell substantially, but since 2004 they have increased. Among other age groups, rates in 2007 were higher than in 2004 (most notably, 35 percent higher among youth 5–13), but variability in rates over time has been less dramatic.

Common diagnoses associated with ACS-IP hospitalizations vary by age. Among children 0–17, asthma, dehydration, and cellulitis were common conditions associated with ACS-IP hospitalizations. For younger children (0–4), bacterial pneumonia was another important condition. Dehydration and cellulitis were also common reasons for such hospitalizations among those ages 18–24. Diabetes, kidney infection, and pelvic inflammatory disease (PID) are common factors for older youth (14–24). ACS hospitalizations for cellulitis and asthma have contributed to the increase observed. Figures 5.2 and 5.3 show time trends related to these specific diagnoses.

Table 5.5
ACS-IP Rates per 1,000 Population Among District Youth, by Age Group, 2000–2007

	2000	2001	2002	2003	2004	2005	2006	2007	% Change, 2004–2007
Ages 0–4	27.9	24.3	18.8	14.8	13.4	16.9	21.3	21.4	59.7
Ages 5–13	7.9	7.8	6.5	6.2	5.4	6.0	7.6	7.3	35.2
Ages 14–17	7.6	7.4	6.3	7.2	5.5	7.8	6.1	6.5	18.2
Ages 18–24	6.8	5.7	5.8	5.3	5.2	5.6	6.1	6.2	19.2
All	10.9	9.8	8.4	7.5	6.8	8.1	9.4	9.5	39.7

Figure 5.1
ACS-IP Rates per 1,000 Population Among District Youth, by Age Group, 2000–2007

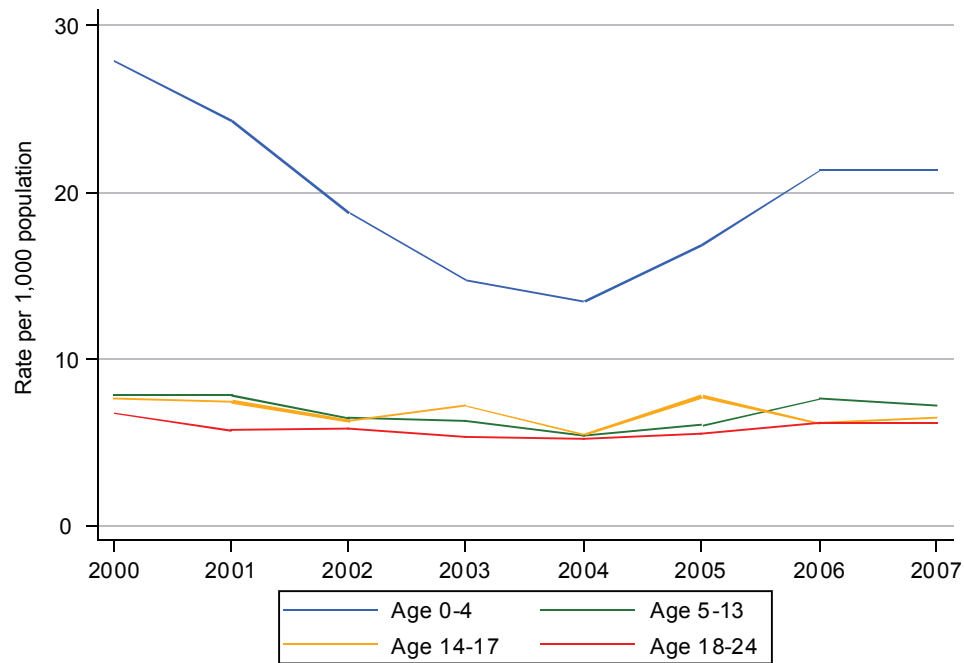


Figure 5.2
Rates of ACS Hospitalizations for Asthma, by Age Group, 2000–2007

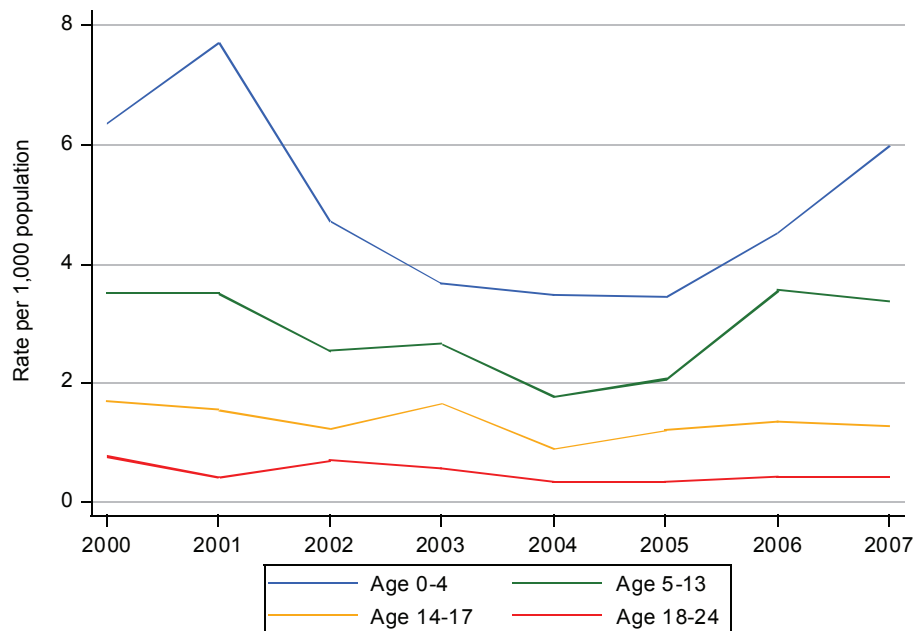


Figure 5.3
Rate of ACS Hospitalizations for Cellulitis, by Age Group, 2000–2007

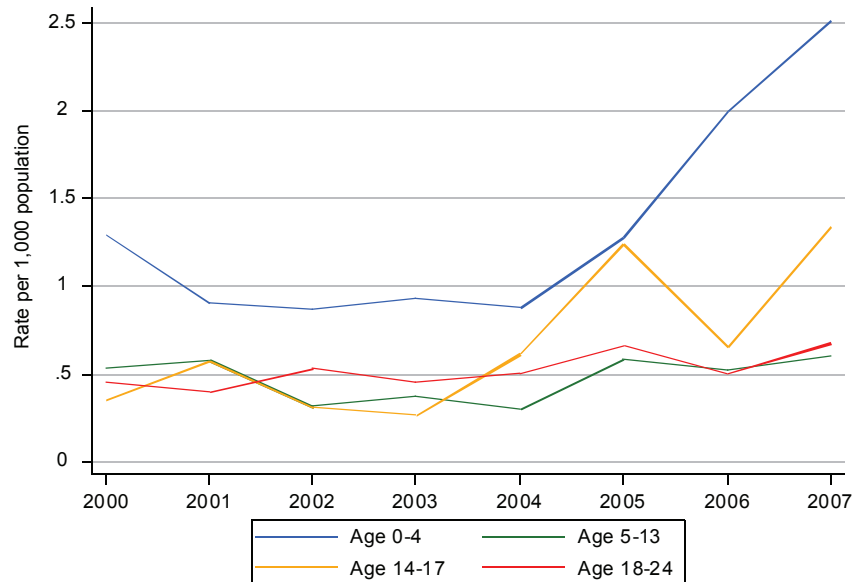
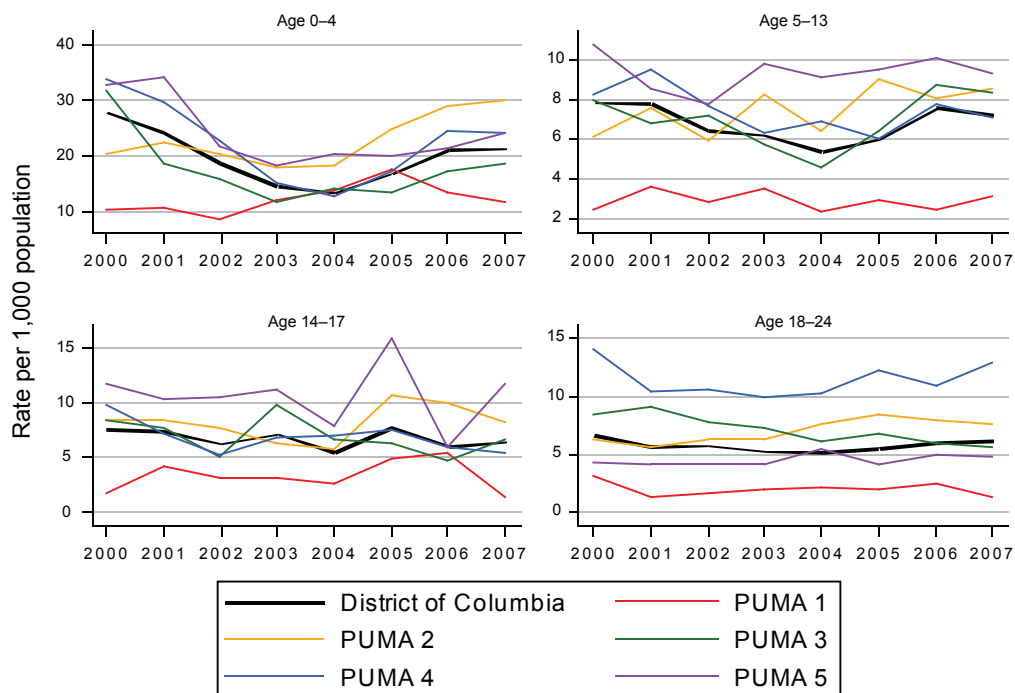


Figure 5.4 profiles changes in ACS-IP rates over time by PUMA (see Figure A.1 for a ward-to-PUMA map). Rates in 2007 were highest in PUMA 2 (B in Figure A.1) for youth ages 0–4; ACS-IP rates increased substantially in PUMA 4 (D in Figure A.1) from 2004 to

Figure 5.4
Trends in ACS-IP Admission Rates, by PUMA



2007. Among youth 5–13 and 14–17, rates were highest in PUMAs 5 (E, Figure A.1) and 2 (B, Figure A.1). Among those 18–24, rates were highest in PUMA 4, with a recent upward trend in ACS-IP rates in that PUMA.

5.3 ED Use Among District Youth

In this section, we explore the leading conditions associated with ED use among District youth. We then turn to an analysis of ACS-ED visits.

Table 5.6 classifies ED visits according to a high-level clinical grouping scheme (clinical classification code). The most common diagnostic category associated with ED visits among District youth 0–4 was respiratory disease. For all other age groups, injury and poisoning predominated and accounted for one-third of ED visits among those 5–17 and nearly one-quarter of ED visits among those 18–24. Mental illness was a factor in between 3 and 5 percent of ED visits among older youth and young adults.

Table 5.6
High-Level Clinical Classification for Youth ED Discharges, 2007

Clinical Classification	Percent of ED Visits (by age)			
	0–4	5–13	14–17	18–24
[01] Infectious and parasitic diseases	7.4	6.2	3.7	3.9
[02] Neoplasms	0.1	0.0	0.0	0.1
[03] Endocrine; nutritional; and metabolic diseases and immunity disorders	0.8	0.6	0.5	0.9
[04] Diseases of the blood and blood-forming organs	0.5	0.6	0.2	0.4
[05] Mental illness	0.1	2.8	5.3	3.6
[06] Diseases of the nervous system and sense organs	13.1	9.6	7.1	7.7
[07] Diseases of the circulatory system	0.2	1.1	2.0	3.0
[08] Diseases of the respiratory system	27.6	15.5	9.4	10.8
[09] Diseases of the digestive system	11.9	6.6	5.0	6.9
[10] Diseases of the genitourinary system	1.7	2.3	5.8	11.2
[11] Complications of pregnancy; childbirth; and the puerperium	0.0	0.0	3.2	8.1
[12] Diseases of the skin and subcutaneous tissue	1.2	1.8	1.7	1.8
[13] Diseases of the musculoskeletal system and connective tissue	1.4	5.8	7.6	5.3
[14] Congenital anomalies	0.2	0.1	0.0	0.0
[15] Certain conditions originating in the perinatal period	1.4	0.0	0.0	0.0
[16] Injury and poisoning	14.5	32.0	32.7	23.4
[17] Symptoms; signs; and ill-defined conditions and factors influencing health status	17.4	14.5	15.0	12.5
[18] Residual codes; unclassified; all E codes	0.4	0.4	0.5	0.5
Total	100.0	100.0	100.0	100.0

Table 5.7 shows specific clinical conditions associated with ED visits. Among youth 0–4, ear conditions were associated with 8 percent of ED visits. Among young adults, nearly 8 percent of ED visits were related to complications of pregnancy.

Table 5.7
Specific Clinical Conditions Associated with ED Use Among District Youth, by Age Group, 2007

Condition	No.	%
Ages 0–4		
Total ED visits	21,199	100.0
[08.01] Respiratory infections	5,054	23.8
[17.01] Symptoms; signs; and ill-defined conditions	2,966	14.0
[06.08] Ear conditions	1,726	8.1
[16.12] Other injuries and conditions due to external causes	1,233	5.8
[09.11] Noninfectious gastroenteritis	1,099	5.2
[01.03] Viral infection	1,065	5.0
[16.06] Open wounds	1,012	4.8
[06.07] Eye disorders	752	3.5
[17.02] Factors influencing health care	731	3.4
Ages 5–13		
Total ED visits	14,407	100.0
[16.12] Other injuries and conditions due to external causes	1,886	13.1
[08.01] Respiratory infections	1,841	12.8
[17.01] Symptoms; signs; and ill-defined conditions	1,291	9.0
[16.06] Open wounds	1,182	8.2
[17.02] Factors influencing health care	798	5.5
[16.08] Superficial injury; contusion	618	4.3
[06.08] Ear conditions	548	3.8
[01.03] Viral infection	484	3.4
Ages 14–17		
Total ED visits	8,638	100.0
[16.12] Other injuries and conditions due to external causes	1,012	11.7
[17.01] Symptoms; signs; and ill-defined conditions	721	8.3
[08.01] Respiratory infections	671	7.8
[16.06] Open wounds	643	7.4
[17.02] Factors influencing health care	619	7.2
[16.08] Superficial injury; contusion	539	6.2
[16.07] Sprains and strains	375	4.3
[10.03] Diseases of female genital organs	300	3.5
[13.08] Other connective tissue disease	292	3.4
Ages 18–24		
Total ED Visits	21,796	100.0
[17.01] Symptoms; signs; and ill-defined conditions	2,193	10.1
[08.01] Respiratory infections	2,094	9.6
[11.03] Complications mainly related to pregnancy	1,685	7.7
[16.06] Open wounds	1,412	6.5
[10.03] Diseases of female genital organs	1,378	6.3
[16.07] Sprains and strains	1,345	6.2
[16.08] Superficial injury; contusion	1,328	6.1
[10.01] Diseases of the urinary system	1,167	5.4
[17.02] Factors influencing health care	773	3.5
[16.12] Other injuries and conditions due to external causes	651	3.0

Turning to ACS-ED visits, Table 5.8 and Figure 5.5 profile changes in ACS-ED rates over time from 2004 to 2007. The patterns are distinct from the ACS-IP patterns. ACS-ED rates in 2004 and 2007 were similar among youth 0–4, but among other youth 2007 rates were 16–17 percent higher compared to 2004.

Table 5.8
ACS-ED Rates per 1,000 Population Among District Youth, by Age Group, 2004–2007

	2004	2005	2006	2007	% Change 2004 to 2007
Ages 0–4	426.8	443.0	423.8	437.4	2.5
Ages 5–13	142.1	161.0	153.0	165.0	16.1
Ages 14–17	141.3	151.5	152.8	164.5	16.4
Ages 18–24	155.8	167.0	183.9	182.6	17.2
All	198.9	215.2	216.2	224.5	12.9

Figure 5.5
ACS-ED Rates per 1,000 Population Among District Youth, by Age Group, 2004–2007

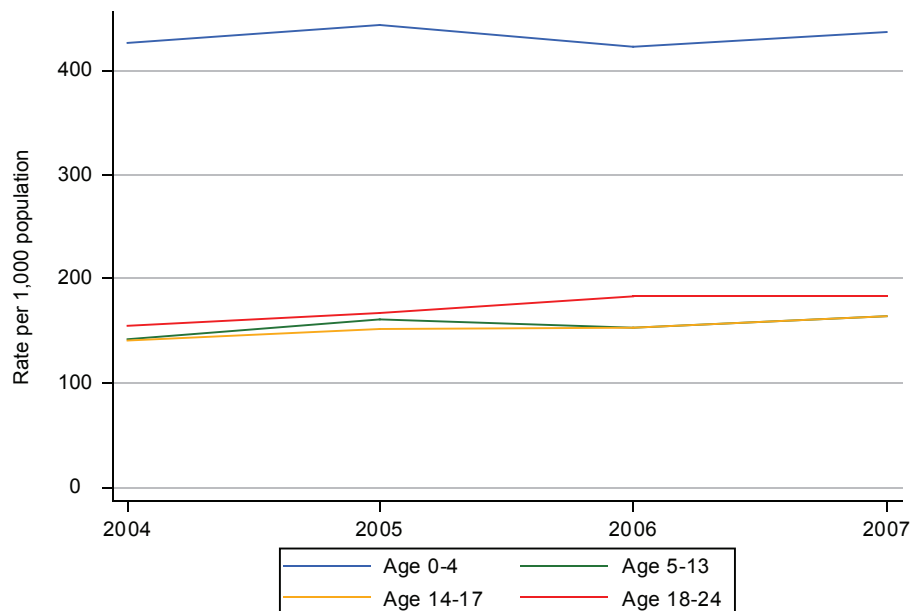
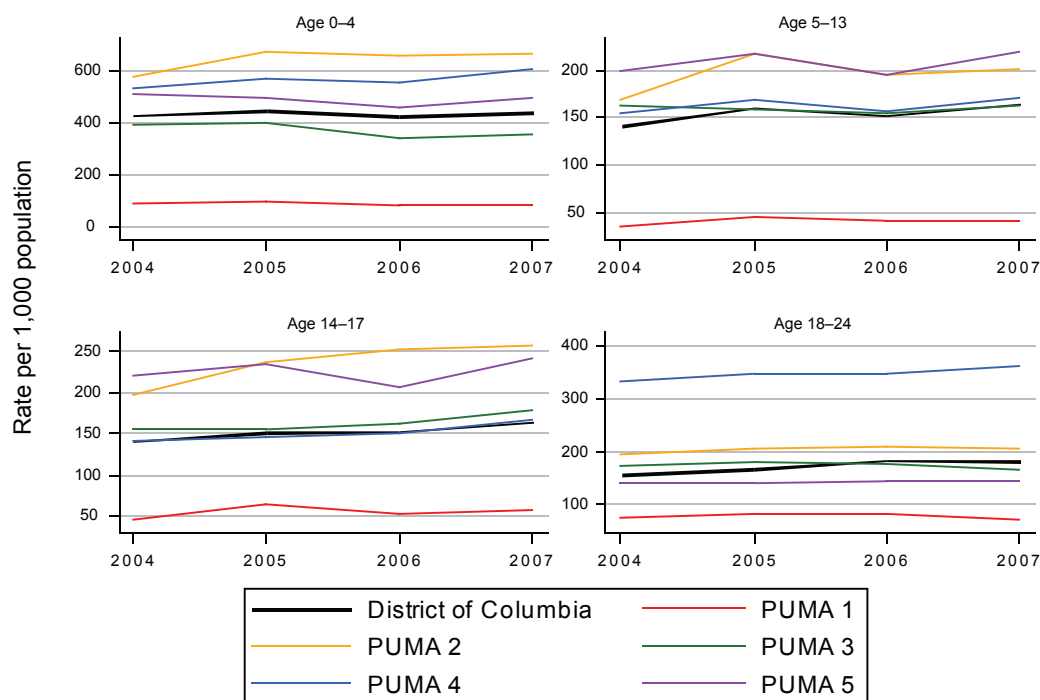


Figure 5.6 profiles changes in ACS-ED rates over time by PUMA (see Figure A.1 for ward-to-PUMA map). The findings are very similar to those for ACS-IP rates.

Figure 5.6
Trends in ACS-ED Admission Rates, by PUMA, Ages 0–17



5.4 Summary

In this section, we summarize key findings from the analyses presented in the rest of Chapter 5.

Office-Based Care Among All District Children

- The majority of District children were reported to have a medical home and to have had a well-child visit in the previous year. Both rates increased between 2003 and 2007 to levels above those among children nationwide. However, children in Wards 7 and 8 were less likely to have a medical home compared to children residing in other areas of the city.
- The proportion of District children who were reported to have received preventive dental care increased from 71 to 75 percent between 2003 and 2007, although it decreased among children ages 0–5. Children in Wards 1, 2, and 3 were least likely to have a preventive dental visit compared to District children residing in other areas of the city.
- Parents in the District were more likely than parents nationwide to report having difficulty seeing a specialist (12 percent versus 8 percent). The rate in the District was higher among low-income families (19 percent) and substantially greater among children in Ward 7 (31 percent).

Health Conditions Associated with Hospital Use

- Asthma contributed to between 11 and 16 percent of inpatient hospitalizations among District youth 0–13 years.
- Mood disorders accounted for between 8 and 10 percent of IP hospitalizations among youth 5–17. Mental health conditions more generally contributed to 13–14 percent of inpatient stays among those 5–17. Among young adults (18–24), mood disorders and schizophrenia together accounted for 7 percent of IP hospitalizations. Mental illness was a factor in between 3 and 5 percent of ED visits among older youth and young adults.
- Hemolytic anemia, and specifically sickle cell anemia, was another key condition associated with inpatient hospitalizations among District youth, accounting for between 4 and 7 percent among children ages 5–24.
- With regard to ACS-IP hospitalizations, asthma, dehydration, and cellulitis were common conditions associated with these hospitalizations among youth 0–17. Dehydration and cellulitis were also common reasons for such hospitalizations among those ages 18–24.
- Among children 5 and over, injury and poisoning were the predominant reasons for ED use and accounted for one-third of ED visits among those 5–17 and nearly one-quarter of ED visits among those 18–24. Fractures were the most common specific injury resulting in hospitalization among youth 5–17.

Ambulatory Care–Sensitive Hospitalizations Among All District Children

- Despite the reported gains in the percentage of children who have a medical home or had a well-child visit between 2003 and 2007, ambulatory care–sensitive inpatient (ACS-IP) rates, which are linked to the availability and efficacy of primary care, increased between 2004 and 2007, most notably among youth 0–4.
 - ACS-IP rates rose among youth 0–4 between 2004 and 2007 some 60 percent, from 13.4 per 1,000 to 21.4 per 1,000. Asthma- and cellulitis-associated hospitalizations accounted for a substantial portion of the overall ACS-IP rate increase.
 - Among older youth (5–24), ACS-ED rates were 16–17 percent higher in 2007 than in 2004.
- The variability observed in access to a medical home, use of dental care, and problems seeing specialists among children living in different parts of the city is also observed in ACS rates.
 - Among youth 0–4, ACS rates (ED and IP) were highest in PUMA 2 and ACS-IP rates increased substantially in PUMA 4.
 - Among youth 5–13 and 14–17, ACS rates were highest in PUMAs 2 and 5.
 - Among those 18–24, ACS rates were highest and had recently increased in PUMA 4.

Use of Health Care Among District Children in Medicaid Managed Care and Fee-for-Service Medicaid

In this chapter, we describe use of health care among District children in Medicaid managed care and FFS Medicaid. Our findings are based on analyses of claims data. We have 2006 claims data for children enrolled in Medicaid managed care; these children comprise the majority of youth Medicaid enrollees. We also have 2007 claims data for youth in FFS Medicaid. These data are more limited compared to the other claims data sets because they include only information for children who use some services during the year. We do not have information for children who use no services. *Consequently, the estimates for the children in managed care are not directly comparable to those in FFS.* We describe how we identify different types of care in Appendix G.

About 3,000 disabled youth are enrolled in a special managed-care plan called Health Services for Children with Special Needs (HSCSN); data from 2007–2008 for these children are presented separately, in Chapter 7.

6.1 Use of Office-Based Care Among Children Enrolled in FFS and Managed Medicaid/Alliance

Table 6.1 shows the fraction of District children by age group who had an office-based visit and the fraction who had a well-child visit among children in Medicaid managed care. Table 6.2 does the same for District children in FFS Medicaid. (As described, a key limitation to the analyses of the FFS Medicaid data is that we observe only children who use at least some care during the course of the year. As a result, all of the findings *represent rates of use among children who used at least some care*, and the statistics are not directly comparable to those derived from the managed care data.)

Among all children in Medicaid managed care, 70 percent had at least one office visit and approximately half (48 percent) had at least one well-child visit during the year.¹ While the percentage of infants and very young children who had a well-child visit or office-based visit was relatively high in the District (91 percent of infants have a well-child visit, for example), the proportion who had at least one well-child visit decreased among older children. Among those 13–17, only 39 percent had a well-child visit. Approximately two-thirds of youth 7–21 had at least one office-based visit during the year. Among infants who had at least one well-child visit,

¹ Frequency of office-based visits and ED visits vary from estimates reported in Lurie et al., 2008, for comparable age groups because of the availability of new information that resulted in improved estimates.

Table 6.1
Use of Office-Based Care and Well-Child Care Among District Children Enrolled in Medicaid or Alliance Managed Care, 2006

Age	At Least One Well-Child Visit (%)	At Least One Office Visit (%)	At Least One Office-Based Visit	
			Average Number of Well-Child Visits	Average Number of Office Visits
<1	91.4	94.0	3.0	6.0
1	72.5	83.7	1.7	4.5
2–6	57.2	76.7	0.8	2.7
7–12	47.4	66.8	0.7	1.9
13–17	38.9	62.3	0.6	2.2
18–21	17.9	63.6	0.3	3.6
All	47.8	69.7	0.8	2.6

the average number of such visits during a year was three and the average number of office-based visits during the year was six. Similarly, children between ages 1 and 2 who had at least one office visit (84 percent) had an average of 4.5 visits.

Table 6.2 summarizes the use of office-based care and well-child visits among youth in FFS Medicaid. Among all FFS youth across all ages—who are observed to have at least some care—two-thirds had at least one office visit and 41 percent had at least one well-child visit. If we were to include children in FFS Medicaid who received no care, these figures would, naturally, be lower. Thus, the percentages represent an upper bound on the proportion of children receiving office-based and well-child care. As such, we can definitively say that fewer FFS Medicaid enrollees had an office visit or well-child visit compared to children in Medicaid managed care (rates of 48 percent for well-child visits and 70 percent for office visits).

On average, among younger children who have at least one office visit a year, the number of office visits during the year is about 3.6–3.7, compared to approximately two for older children. Younger children (less than age 2) who had at least one well-child visit had on average about two well-child visits during the year. The majority of older children who had a well-child visit had one visit.

Table 6.2
Upper-Bound Estimates of Use of Office-Based Care and Well-Child Care Among District Children Enrolled in FFS Medicaid, 2008 (%)

Age	At Least One Office Visit*	At Least One Well-Child Visit*	At Least One Office-Based Visit	
			Average Number of Office Visits	Average Number of Well-Child Visits
<1 year	70.5	56.6	3.6	2.2
1 year	72.5	58.1	3.7	1.5
2–6 years	70.0	51.5	2.3	1.2
7–12 years	70.7	51.0	2.2	1.2
13–17 years	66.0	35.6	2.6	1.1
18–21 years	56.8	18.8	3.5	1.2
All	66.6	40.8	2.7	1.3

* Nonusers not included. With nonusers included, these figures would be lower.

NOTE: Estimates calculated among children who received health care services during the year.

District rates appear to be below the national rates for well-child and office visits among publicly insured children. Nationally, 90 percent of publicly insured children under 17 have visited a doctor's office in the past 12 months and 75 percent have had a well-child visit (Robert Wood Johnson Foundation, 2007, p. 6).

6.2 Use of Hospital-Based Care Among Children Enrolled in FFS and Managed Medicaid/Alliance

Chapter 5 profiles inpatient hospital and ED use among all District children, regardless of insurance status, and also analyzes ACS inpatient and ED use over time. Those analyses show rising ACS-IP and ACS-ED rates over time since 2004. The analyses in this chapter are for a given year (2006 for managed care enrollees and 2007 for FFS enrollees), but they provide more insight into hospital use among District youth, at least for those who are publicly insured. In particular, the analyses here are able to look at rates of hospital use during the course of a year among particular individuals, repeated hospital use, and the interaction between use of hospital-based care and use of office-based care.

Table 6.3 describes rates of use of hospital-based care among youth in Medicaid managed care; Table 6.4 does the same for youth in FFS Medicaid (who use the same type of care during the year).

Table 6.3
Use of Hospital-Based Care Among District
Children Enrolled in Medicaid or Alliance
Managed Care, 2006 (%)

Age	Any ED Visit	Any Inpatient Stay
<1	52.9	5.9
1	49.4	7.2
2–6	30.3	2.5
7–12	19.4	1.8
13–17	22.7	4.1
18–21	30.2	12.3
All	26.7	3.9

Table 6.4
Upper-Bound Estimates of Use of Hospital-Based
Care Among District Children Enrolled in Medicaid
FFS, 2008 (%)

Age	Any ED Visit	Any Inpatient Stay
<1	42.3	14.5
1	51.1	7.0
2–6	40.4	3.5
7–12	38.1	6.9
13–17	48.5	11.3
18–21	50.8	14.3
All	44.9	9.6

NOTE: Estimates were calculated for children who received health care services during the year.

Among children of all ages in managed Medicaid, about 27 percent used the ED during a year and just less than 4 percent had an inpatient admission. ED usage was on par with national percentages of Medicaid-enrolled children (27 percent), although the percentage of children under the age of 17 with one or more inpatient stays (4.1 percent) was lower nationally (2.1 percent of privately or publicly insured children) (NCHS, 2007).

Rates of ED use were highest among children age less than 1 year (53 percent), 1 year (49 percent), 2–6 years (30 percent), and 18–21 (30 percent). The rate of inpatient admission was highest among those 18–21 (12 percent), although this is likely to reflect inpatient admissions related to labor and delivery. It was about 6–7 percent among infants and children less than age 2.

Approximately 45 percent of youth in FFS Medicaid are observed to use some ED care and 10 percent have had an inpatient admission. As with office-based visits, these percentages reflect an upper bound on rates of ED and inpatient use, because we do not observe children who use no care. (Based on the MCO and HSCSN data, the percentage of children with no use observed is likely to be between 10 and 20 percent of all children.)

6.3 Patterns of Use of Office-Based and Hospital-Based Care Among Children Enrolled in FFS and Managed Medicaid/Alliance

Table 6.5 profiles children in Medicaid managed care according to their patterns of use of office-based care and ED care. Table 6.6 does the same for youth in FFS Medicaid.

The first two columns identify the percentage of children who received no care during the year (column 1) or used ED care only (column 2).

Across children of all ages in Medicaid managed care, 26 percent reported no office care or ED care, with a higher fraction of about one-third among older youth (13–17 and 18–21). The second column is particularly important because it indicates the percentage of children who were disconnected (have no office care) and had a need for care (use ED care). In total, 5 percent of children appeared to have ED care only, with higher percentages among children ages 1 year, 13–17, and 18–21 (between 6 and 7 percent of each age group).

Turning to the joint distribution of office-based care and ED visits among FFS enrollees, a substantial fraction—approximately 20 percent—of children who used some services during

Table 6.5
Office-Based Care and ED Visits Among District Youth in
Medicaid/Alliance Managed Care, 2006 (%)

Age	No Office Visit or ED Use	ED Only	Office Only	ED and Office
<1	5.0	1.2	44.5	49.4
1	10.7	6.2	42.3	40.7
2–6	19.0	4.5	51.9	24.6
7–12	29.3	4.2	52.2	14.3
13–17	32.5	5.9	46.1	15.5
18–21	32.3	6.7	40.4	20.6
All	25.9	5.0	48.9	20.3

NOTE: Excludes children who use inpatient care.

Table 6.6
Use of Office-Based Care and ED Visits Among District Youth in FFS Medicaid Who Use Health Care Services, 2008 (%)

Age	No Office Visit or ED Use	Office Only	ED Only	ED and Office
<1	9.8	50.2	17.6	22.5
1	8.9	42.3	17.8	31.0
2–6	11.9	48.7	18.0	21.4
7–12	12.6	51.7	15.8	19.9
13–17	12.8	42.0	20.1	25.1
18–21	18.9	33.9	24.0	23.2
All	13.4	44.6	19.1	23.0

NOTE: Does not include FFS Medicaid enrollees who did not use services or who used inpatient services.

the year had only ED-based care. The fraction was higher among older children (24 percent among those 18–21) compared to younger children (16 percent among those 7–12).

6.4 Profiles of Frequent Users of the Emergency Department

Tables 6.7 and 6.8 look more specifically at children who used the ED heavily, among managed care enrollees and FFS enrollees, respectively. Across all age groups in managed care, 3.4 percent used the ED three or more times in a year and fewer than 1 percent used the ED five or more times in a year. But among the youngest children (under age 2), the prevalence of frequent use was higher, with 13 percent who visited three or more times in a year and 3 percent who visited the ED five or more times.

Table 6.7
Repeat Use of ED Care Among District Youth in Managed Medicaid, 2006 (%)

Age	Three or More Visits per Year	Five or More Visits per Year
<1	12.9	3.1
1	12.5	3.1
2–6	3.9	0.5
7–12	1.6	0.2
13–17	1.9	0.3
18–21	4.3	0.8
All	3.4	0.6

There were some differences in frequent ED use among managed care patients across zip codes. Medicaid managed care enrollees from zip codes 20017 and 20018 were most likely to be heavy ED users compared to residents living in other zip codes (4.9 and 4.7 percent, compared to 3.4 percent across all zip codes with at least 100 Medicaid/Alliance managed care youth enrollees). We also examined heavy ED use among children with particular chronic conditions. Notably, among children with asthma, 14 percent used the ED one to two times, and 29 percent used the ED frequently (three or more visits/year).

Table 6.8 shows the fraction of ED users who used the ED frequently by age group among FFS enrollees.² The percentages shown are the percentages of heavy ED users *who had any ED visit*. The comparable percentage for all children in the general managed care plan is 13 percent; thus, heavy ED use is more common among FFS Medicaid enrollees. Among FFS enrollees, heavy ED use was greatest among those 18–21 (40 percent of ED users).

Table 6.8
Repeat ED Use Among Children Enrolled in FFS
Who Use ED Services, by Age Group, 2007 (%)

Age	Three or More Visits per Year (ED Users)
<1	15.8
1	18.0
2–6	16.4
7–12	15.5
13–17	24.5
18–21	39.9
All	24.0

Table 6.9 profiles the most common diagnoses associated with ED visits for heavy ED users in managed care; Table 6.10 does the same for FFS enrollees. The tabulation shown includes the primary diagnoses for all ED visits among all frequent users.

Asthma was a leading condition for ED visits among managed care enrollees ages 1–17 who were heavy ED users, and otitis media (ear infection) was a common cause for ED use among children 0–5 who were heavy ED users. Combining all pregnancy- and delivery-related ICD9s (V22, 633–650) suggests that 20 percent of ED visits among frequent users 18–21 were related to pregnancy and related complications, as were 10.6 percent of those for ages 13–17. Similarly, grouping together three-digit ICD9s related to mental health (296–312) suggests that 3 percent of ED visits among frequent users 13–17 were related to mental health, as were 2.6 percent among those 18–21.

As we found among managed care enrollees, asthma was a leading condition for ED visits among FFS enrollees ages 1–17 who were heavy ED users, and otitis media (ear infection) was a common cause for ED use among children 0–5 who are frequent ED users (see Table 6.10). (Among children with asthma in FFS Medicaid, 30 percent were identified as frequent ED users.)

Grouping together three-digit ICD9s related to mental health (292–314) suggests that 14 percent of ED visits among frequent users ages 7–12 were related to mental health, as were 7–8 percent of visits for those ages 13–17 and 18–21. Thus, mental health issues contributed more to heavy ED use among the FFS population than among the managed care population.

Combining all pregnancy- and delivery-related ICD9s (V22, 633–650) suggests that 9 percent of ED visits among frequent users ages 18–21 were related to pregnancy and complications thereof.

² We were not able to reliably analyze inpatient readmissions in the FFS data.

Table 6.9
Most Common Diagnoses Associated with ED Visits by Frequent ED Users Among District Youth in Managed Medicaid/Alliance, 2006

Primary Diagnosis (3-Digit ICD9)	Percent
Age <1	
382-Suppurative and unspecified otitis media	17.1
465-Acute upper respiratory infections of multiple or unspecified sites	16.5
079-Viral infection in conditions classified elsewhere and of unspecified sites	8.2
Age 1	
465-Acute upper respiratory infections of multiple or unspecified sites	15.1
780-General symptoms	14.9
493-Asthma	7.5
786-Symptoms involving respiratory system and other chest symptoms	5.4
382-Suppurative and unspecified otitis media	5.2
Ages 2–5	
493-Asthma	12.1
780-General symptoms	11.1
465-Acute upper respiratory infections of multiple or unspecified sites	9.1
382-Suppurative and unspecified otitis media	7.1
786-Symptoms involving respiratory system and other chest symptoms	4.5
Ages 7–12	
493-Asthma	13.7
780-General symptoms	11.5
786-Symptoms involving respiratory system and other chest symptoms	6.9
789-Other symptoms involving abdomen and pelvis	5.3
462-Acute pharyngitis	4.6
486-Pneumonia, organism unspecified	3.1
Ages 13–17	
493-Asthma	7.1
V22-Normal pregnancy	6.1
786-Symptoms involving respiratory system and other chest symptoms	5.1
789-Other symptoms involving abdomen and pelvis	5.1
518-Other diseases of lung	4.6
Ages 18–21	
789-Other symptoms involving abdomen and pelvis	6.2
V22-Normal pregnancy	5.2
648-Other current conditions in the mother classifiable elsewhere but complicating pregnancy, childbirth, and the puerperium	4.1
682-Other cellulitis and abscess	4.1
250-Diabetes mellitus	3.6
643-Excessive vomiting in pregnancy	3.6
All ages	
780-General symptoms	9.8
465-Acute upper respiratory infections of multiple or unspecified sites	8.8
493-Asthma	8.2
382-Suppurative and unspecified otitis media	5.2
786-Symptoms involving respiratory system and other chest symptoms	4.4
558-Other noninfective gastroenteritis and colitis	2.8
079-Viral infection in conditions classified elsewhere and of unspecified site	2.7
789-Other symptoms involving abdomen and pelvis	2.3
276-Disorders of fluid, electrolyte, and acid-base balance	1.9
486-Pneumonia, organism unspecified	1.7

Table 6.10
Diagnoses Associated with ED Visits Among Frequent ED Users Enrolled in FFS Medicaid, 2007

Primary Diagnosis (3 Digit ICD9)	Percent
Age <1	
[465] Acute upper respiratory infections of multiple or unspecified sites	9.0
[466] Acute bronchitis and bronchiolitis	7.0
[382] Suppurative and unspecified otitis media	7.0
[493] Asthma	9.0
Age 1	
[465] Acute upper respiratory infections of multiple or unspecified sites	13.8
[493] Asthma	9.2
[780] General symptoms	6.9
Ages 2–6	
[493] Asthma	9.8
[780] General symptoms	7.2
[382] Suppurative and unspecified otitis media	5.9
[959] Injury, other and unspecified	5.1
[462] Acute pharyngitis	4.2
Ages 7–12	
[959] Injury, other and unspecified	7.9
[493] Asthma	6.7
[786] Symptoms involving respiratory system and other chest symptoms	5.3
[462] Acute pharyngitis	4.7
[312] Disturbance of conduct, not elsewhere classified	3.5
Ages 13–17	
[493] Asthma	6.1
[959] Injury, other and unspecified	4.9
[789] Other symptoms involving abdomen and pelvis	4.0
[780] General symptoms	3.4
[786] Symptoms involving respiratory system and other chest symptoms	2.7
[462] Acute pharyngitis	2.6
[784] Symptoms involving head and neck	2.3
[646] Other complications of pregnancy, not elsewhere classified	2.0
Ages 18–21	
[789] Other symptoms involving abdomen and pelvis	6.0
[780] General symptoms	4.7
[786] Symptoms involving respiratory system and other chest symptoms	4.1
[599] Other disorders of urethra and urinary tract	3.6
[462] Acute pharyngitis	2.7
[295] Schizophrenic psychoses	2.3
[784] Symptoms involving head and neck	2.2
[493] Asthma	2.0
All ages	
[493] Asthma	4.9
[780] General symptoms	4.5
[789] Other symptoms involving abdomen and pelvis	4.2
[786] Symptoms involving respiratory system and other chest symptoms	3.7
[959] Injury, other and unspecified	3.5
[462] Acute pharyngitis	2.8
[599] Other disorders of urethra and urinary tract	2.2
[784] Symptoms involving head and neck	2.0
[465] Acute upper respiratory infections of multiple or unspecified sites	1.9
[873] Other open wound of head	1.8
[282] Hereditary hemolytic anemias	1.5
[682] Other cellulitis and abscess	1.5
[729] Other disorders of soft tissues	1.4

6.5 Readmission Patterns Among Children Enrolled in Medicaid/Alliance Managed Care

Finally, we explored the extent to which District youth in managed Medicaid were readmitted to the hospital after an inpatient stay. (Data limitations precluded us from doing the same analyses for FFS enrollees.) Among all ages, the readmission rate was 6.7 percent within one month's time (4.3 percent within two weeks' time). The readmission rate was higher (11.5 percent in two weeks' time) in instances where the initial inpatient admission was related to a mental health issue.

We also tabulated the diagnoses associated with the initial inpatient admissions in instances in which a readmission occurred within one month. Among readmissions, 16 percent were related to an initial inpatient admission for a behavioral health issue (ICD9 three-digit codes between 296 and 313), and nearly a third of admissions were related to pregnancy, delivery, or complications thereof. At the three-digit ICD9 level (more clinical specificity), 12 percent of readmissions were for normal pregnancy, 7 percent for asthma, and 7 percent for early or threatened labor.

6.6 Summary

Below, we summarize key findings from the analyses presented Chapter 6.

- Office-Based Care
 - Among all children in Medicaid managed care, 70 percent had at least one office visit and approximately one-half had at least one well-child visit during the year. The proportion of children who had at least one well-child visit was higher among younger children than among older children.
 - Fewer FFS Medicaid enrollees received an office visit or well-child visit compared to children in Medicaid managed care. At most, two-thirds of FFS Medicaid enrollees had one or more office visits and 41 percent had a well-child visit during the course of a year, but we are unable to estimate these percentages more precisely.
 - District rates appear to be below the national rates for well-child and office visits among publicly insured children. Nationally, 90 percent of publicly insured children under 17 have visited a doctor's office in the past 12 months and 75 percent have had a well-child visit.
 - Rates of office-based care and well-child care for Medicaid managed care and FFS enrollees were well below rates in NSCH among all District children. However, NSCH includes privately insured children, for whom rates may be higher. But differences suggest that there may have been some parent reporting error in NSCH and/or that there may have been some omitted claims from claims data (the care was provided but no claim was closed).
- Hospital-Based Care
 - Among children of all ages in managed Medicaid/Alliance, about 27 percent used the ED during the year and just under 4 percent had an inpatient admission. ED rates

- among youth managed care enrollees were similar to those nationally (among all youth Medicaid enrollees), but inpatient admission rates were higher.
- Across children of all ages in Medicaid/Alliance managed care, 26 percent reported no office care or ED care, with a higher fraction of about 33 percent among older youth (13–17 years and 18–21 years). Five percent of children appeared to have ED care only.
- Repeated ED Use
 - Among youth enrollees in Medicaid/Alliance managed care who used the ED at least once, 13 percent used the ED heavily—at least three or more times during the course of a year. The percentage was higher among FFS enrollees (24 percent).
 - Approximately 3 percent of all youth enrolled in Medicaid/Alliance managed care were heavy ED users; less than 1 percent used the ED 5 or more times during the year. However, the use of the ED was higher among youth 0–2 in managed care (13 percent heavy ED and 3 percent who are frequent users). Among youth in FFS Medicaid, frequent ED use was greatest among those 18–21.
 - Frequent ED use was concentrated among certain conditions:
 - Asthma was a leading condition for ED visits among children who are heavy ED users ages 1–17.
 - Otitis media (ear infection) was a common cause for ED use among children 0–5 who are heavy ED users.
 - Among managed care enrollees, 20 percent of ED visits among frequent users 18–21 were related to pregnancy and complications thereof, as were 11 percent of those for ages 13–17. Among FFS enrollees, 9 percent of ED visits among frequent users 18–21 were related to pregnancy and complications thereof.
 - Among FFS enrollees, 14 percent of ED visits among frequent users ages 7–12 were related to mental health, as were 7–8 percent of visits for youth ages 13–17 and 18–21. Among managed care enrollees, 3 percent of ED visits among frequent users ages 13–21 were related to mental health.
 - Inpatient Readmissions
 - Among managed care enrollees of all ages, the readmission rate was approximately 7 percent within one month's time and 4 percent within two weeks' time.
 - The readmission rate was higher in instances where the initial inpatient admission was related to a mental health issue. Among readmissions, 16 percent were related to an initial inpatient admission for a behavioral health issue.
 - Nearly one-third of readmissions were related to pregnancy, delivery, or the complications thereof.

Use of Health Care Among District Children with Special Needs

In this chapter, we profile health care use among District children with special health care needs who are enrolled in a special managed care plan, HSCSN. Children enrolled in HSCSN are eligible for or enrolled in SSI. In analyzing children in HSCSN, we group together children age less than 1 year old and less than 2 years old because of the smaller numbers of children in HSCSN in these age groups (compared to numbers in the managed care data).

7.1 Use of Office-Based Care Among Children Enrolled in HSCSN

Table 7.1 profiles use of well-child and office-based care among children in HSCSN. Across all age groups, 71 percent had at least one well-child visit and 87 percent had at least one office visit. The proportion of children with each type of visit was higher among younger than among older children. Among children of all ages who had at least one office-based visit, the mean number of office visits in a year was 3.7.

Some children in HSCSN also receive home-based health care. In total, approximately 7 percent of children appeared to have some home health care during the year (not shown). Nationally, 4.5 percent of children with special health care needs under the age of 17 reported needing home health care in the past year.¹

Table 7.1
Use of Office-Based Care and Well-Child Care Among District Children Enrolled in HSCSN, by Age Group, 2007–2008

Age	At Least One Well-Child Visit (%)	At Least One Office Visit (%)	At Least One Office-Based Visit	
			Average Number of Office Visits	Average Number of Well-Child Visits
0–1	94.5	99.2	8.8	2.8
2–6	81.8	94.8	4.6	1.2
7–12	76.7	89.2	3.2	1.1
13–17	67.6	83.8	3.2	1.1
18–21	51.6	80.1	3.8	1.2
All	71.2	87.1	3.7	1.2

¹ See CDC, *National Survey of Children with Special Health Care Needs Chartbook*, 2005–2006; and HHS, HRSA, Maternal and Child Health Bureau, 2008.

7.2 Use of Hospital-Based Care Among Children Enrolled in HSCSN

Table 7.2 profiles use of hospital-based care. Forty-two percent of HSCSN enrollees had an ED visit during the course of a year, and 11 percent had an inpatient hospitalization. These rates were higher than for the general managed care population in the District (27 percent and 4 percent for ED and inpatient, respectively), but the children in HSCSN have significant health needs. Rates of ED use were highest among the youngest children, as were rates of inpatient hospital admissions. Approximately 3 percent of all children had three or more inpatient stays during the year, including approximately 9 percent of children less than two years old (not shown).

Table 7.2
Use of Hospital-Based Care Among Children Enrolled
in HSCSN, by Age Group, 2007–2008 (%)

Age	Any ED Visit	Any Inpatient Stay
0–1	69.9	41.5
2–6	46.7	11.0
7–12	36.2	8.4
13–17	40.0	10.5
18–21	45.1	11.2
All ages	41.7	11.3

7.3 Patterns of Use of Office-Based and Hospital-Based Care Among Children Enrolled in HSCSN

Table 7.3 summarizes the joint distribution of office visits and hospital care. Given the relatively high rate of inpatient utilization among the HSCSN children, we include inpatient hospital stays in the joint distribution.

Approximately half of the children received care primarily through office visits (column 2; 49 percent had office visits only). However, 8 percent of children appeared to have no inpatient admissions, office-based visits, or ED visits, and another 5 percent had only hospital-based care (ED only, inpatient only, or inpatient and ED only).

Table 7.3
Use of Office Visits and/or Hospital-Based Health Care Among HSCSN Enrollees, by Age Group,
2007–2008 (%)

Age	No Inpatient, No Office Visits, No ED Visits	Office Only (No Inpatient or ED)	ED Only (No Inpatient or Office)	Office and ED (No Inpatient)	Inpatient Only (No Office or ED)	Inpatient and Office (No ED)	Inpatient and ED Only (No Office)	Inpatient, ED, and Office
0–1	0.4	23.7	0.4	33.9	0.0	5.9	0.0	35.6
2–6	3.3	49.1	1.5	35.0	0.1	0.8	0.2	9.9
7–12	7.6	55.4	2.7	25.9	0.2	0.7	0.3	7.2
13–17	9.4	48.7	5.8	25.6	0.3	1.7	0.7	7.8
18–21	11.7	40.0	6.8	30.2	0.4	2.8	1.0	7.1
All ages	8.0	48.6	4.2	28.0	0.2	1.6	0.6	8.9

7.4 Use of Care by Qualifying Diagnosis

The tables below profile use of office-based care, hospital-based care, home health care, and mental health services by qualifying diagnosis.

Table 7.4
Use of Office Care, ED Care, and Inpatient Hospital Care among HSCSN Enrollees, by Qualifying Diagnosis (%)

Qualifying Diagnosis	Any Office Visit	Any ED Visit	Any Inpatient Stay
Hyperkinetic	81.9	51.0	16.3
Developmental delay	86.3	41.8	11.0
Mental retardation	86.8	32.1	16.1
Cerebral palsy	89.7	43.4	43.8
Pervasive developmental disorder (including autism and psychosis)	88.7	42.3	20.8
Asthma	91.7	45.2	16.3
Episodic mood disorders	77.9	77.0	34.2
Emotional disturbance	82.2	47.3	20.0
Mild mental retardation	89.1	39.0	10.4
Hearing loss	93.1	29.5	11.1
Healthy child (foundling)	97.1	64.7	45.5
Hemolytic anemia (including sickle cell)	91.3	77.9	71.6
General symptoms (including syncope and convulsions)	95.0	49.5	31.9
All	87.1	41.7	11.3

Rates of ED use were highest among children with hemolytic anemia and episodic mood disorder. Inpatient admissions were most common among those with hemolytic anemia and cerebral palsy. Rates of ED use and inpatient admission were also high among healthy children who were “foundlings,” that is, children whose parents are not known or not present. Rates of office-based care were lowest (and lower by approximately 9 percentage points compared to the mean) among children with episodic mood disorders, who had high rates of ED use as well as a relatively high rate of inpatient admission (34 percent).

Rates of actual home health use (Table 7.5) in the District varied across children with different health conditions. Rates were highest among children with HIV/AIDS or cerebral palsy (9.5 percent and 11.9 percent of these children, respectively), who had home health care during at least 9 of the 12 months observed. Nineteen percent of children with HIV/AIDS had home health in at least one month out of the twelve months observed, as did 28 percent of children with cerebral palsy. Further, 13 percent of children with a pervasive developmental disorder (which includes autism) had at least one month of home health care.

We also examined the mental health service use among children in HSCSN (Table 7.6). Using CPT codes (as described in Appendix G), we assessed the number of specialty mental health visits by diagnosis during the course of a year.

Table 7.5
Use of Home Health Care Among HSCSN Enrollees, by Top-Qualifying Diagnosis, 2007–2008 (%)

Condition	No. of Months with Home Care			
	0	1–4	5–8	9–12
Cerebral palsy	71.7	10.7	5.8	11.9
HIV/AIDS	81.0	4.8	4.8	9.5
Pervasive developmental disorder (including autism and psychosis)	86.7	7.0	3.5	2.7
Congenital anomaly, nervous system	88.5	6.6	0	4.9
Low birth weight/preterm	88.9	5.6	0	5.6
General symptoms (including syncope and convulsions)	89.0	5.0	3.0	3.0
Chromosomal anomaly (including Down's syndrome)	92.7	6.3	0	1.0
Episodic mood disorders	93.7	5.3	1.1	0
Adjustment disorder	94.4	5.6	0	0
Epilepsy/recurrent seizures	94.9	5.1	0	0
All (conditions listed)	94.3	3.5	0.8	1.4

Table 7.6
Frequency of Specialty Mental Health Visits by Diagnosis Among Children with Special Health Care Needs (%)

Diagnosis	No Mental Health Visits	Five or More Mental Health Visits
HIV/AIDS	81.0	6.0
Hemolytic anemia (including sickle cell)	93.3	2.9
Episodic mood disorders	32.6	36.8
Pervasive developmental disorder (including autism and psychosis)	63.7	20.3
Adjustment disorder	63.4	18.3
Depressive disorder	55.7	16.4
Conduct disorder	45.8	28.9
Emotional disturbance	72.8	10.6
Hyperkinetic	65.0	16.5
Developmental delay	92.0	2.9
Mild mental retardation	86.2	5.1
Other mental retardation	82.3	6.5
Mental retardation	86.5	4.2
Cerebral palsy	90.0	4.3
Epilepsy/recurrent seizure	91.5	3.4
Hearing loss	93.1	3.1
Asthma	91.2	1.0
Congenital anomaly, nervous system	83.6	9.8
Chromosomal anomaly (including Down's syndrome)	90.6	5.2
Low birth weight/preterm	98.9	0.0
General symptoms (including syncope and convulsions)	84.0	7.0
Speech disturbance	96.9	1.6
Healthy child (foundling)	100.0	0.0
All	79.0	9.6

As expected, intense mental health service use (five or more visits) was most frequent among those with episodic mood disorders (37 percent) and conduct disorder (29 percent). But a substantial fraction of children with mental health diagnoses appeared to have no mental health visits, including nearly three-fourths of children with an emotional disturbance, two-thirds of children with pervasive developmental disorders or adjustment disorders, more than half of children with depressive disorder, and one-third of children with an episodic mood disorder.

Table 7.7 shows the joint distribution of office-based and hospital-based care, but stratifies children according to qualifying diagnosis. Between 10 and 11 percent of children with hyperkinetic syndrome or who have mental retardation appeared to have no office visits or hospital-based care during the year. Children with episodic mood disorders and emotional disturbances had the highest rate of care from the ED only (9–10 percent).

Table 7.7
Use of Office-Based and/or Hospital-Based Care Among HSCSN Enrollees, by Qualifying Diagnosis, 2007–2008 (%)

Qualifying Diagnosis	No Inpatient, No Office Visits, No ED Visits	Office Only (No Inpatient or ED)	ED Only (No Inpatient or Office)	Office and ED (No Inpatient)	Inpatient Only (No Office or ED)	Inpatient and Office (No ED)	Inpatient and ED Only (No Office)	Inpatient, ED, and Office
Hyperkinetic	10.9	46.4	6.1	29.8	0.3	0.6	0.7	5.2
Developmental delay	8.2	54.9	5.0	27.9	0.2	0.6	0.3	2.9
Mental retardation	10.5	60.5	2.7	21.9	0	1.2	0	3.3
Cerebral palsy	8.2	48.9	1.8	24.0	0	4.0	0.3	12.8
Pervasive developmental disorder	7.4	54.7	3.1	27.0	0	0.4	0.8	6.6
Asthma	6.7	50.8	1.6	34.2	0	1.0	0	5.7
Episodic mood disorders	9.5	26.3	10.0	33.7	1.1	3.2	1.6	14.7
Emotional disturbance	6.1	53.9	9.4	22.8	0	1.1	2.2	4.4
Mild mental retardation	6.5	58.7	3.6	27.5	0	0	0.7	2.9
Hearing loss	3.8	68.7	3.1	21.4	0	0	0	3.1
Healthy child (foundling)	1.9	27.6	1.0	41.0	0	7.6	0	21.0
Hemolytic anemia (including sickle cell)	3.9	21.2	3.9	20.2	0	3.9	1.0	46.2
General symptoms (including syncope and convulsions)	4.0	48.0	1.0	32.0	0	1.0	0	14.0
All conditions	8.2	49.5	4.5	28.1	0.2	1.4	0.5	7.5

7.5 Profiles of Frequent Users of the Emergency Department

Table 7.8 examines HSCSN enrollees who use the ED heavily during the year, with three or more ED visits during a 12-month period. Approximately 9 percent of enrolled youth used the ED frequently during the year (three or more times), and 3 percent used it five or more times during the year. Rates of frequent ED use were highest among those less than two years old.

Table 7.8
Repeat Use of ED Care Among District Youth in
HSCSN, 2007–2008 (%)

Age	Three or More ED Visits/Year	Five or More ED Visits/Year
0–1	27.6	9.8
2–6	12.4	3.1
7–12	6.2	1.7
13–17	7.6	2.5
18–21	12.5	4.3
All ages	9.3	2.9

Table 7.9 profiles the primary health condition (qualifying diagnosis) among HSCSN-enrolled youth who use the ED heavily. Note that the analysis for the children in the general managed care plan was slightly different and focused on the diagnoses associated with the ED visits; this analysis uses the key underlying health conditions among children who are heavy ED users and is somewhat more informative as a result.

Table 7.9
Percentage of Heavy ED Users Enrolled in HSCSN, by Qualifying Diagnosis,
2007–2008

Qualifying Diagnosis	Three or More ED Visits
Hemolytic anemia (including sickle cell)	29.8
Healthy child (foundling)	17.1
Episodic mood disorders	13.2
Cerebral palsy	10.6
Asthma	10.4
General symptoms (including syncope and convulsions)	9.0
Mild mental retardation	8.0
Pervasive developmental disorder (including autism and psychosis)	6.3
Hyperkinetic	6.1
Developmental delay	6.1
Emotional disturbance	6.1
Hearing loss	6.1
Mental retardation	6.0
All	7.3

Frequent ED use was most prevalent among children with hemolytic anemia, among foundling children, and among children with episodic mood disorders. More than 10 percent of children with cerebral palsy and asthma were also heavy ED users. A slightly different way to look at heavy ED use is to describe the population of heavy ED users, which reflects both the prevalence of a particular condition among enrollees in HSCSN and their use of the ED. Children with developmental delays and hyperkinetic disorder accounted for more than one-third of all frequent ED users and 25 percent of very frequent ED users (five or more ED visits per year). Sixteen percent of very heavy ED users were children with hemolytic anemia.

We also examined the extent of inpatient use among children by qualifying diagnosis (Table 7.10).

Table 7.10
Inpatient Admissions Among Children in HSCSN, by Qualifying Diagnosis, 2007–2008

	No. of Inpatient Stays			
	1 or More	1	2	3+
Hyperkinetic	6.8	4.4	1.4	1.0
Developmental delay	4.0	3.3	0.7	0
Mental retardation	4.5	3.3	0.9	0.3
Cerebral palsy	17.0	7.3	2.7	7.0
Pervasive developmental disorder	7.8	5.1	1.2	1.6
Asthma	6.7	5.2	1.6	0
Episodic mood disorders	20.5	13.7	1.6	5.3
Emotional disturbance	7.8	3.9	1.7	2.2
Mild mental retardation	3.6	1.5	1.5	0.7
Hearing loss	3.1	3.1	0	0
Healthy child (foundling)	28.6	25.7	1.9	1.0
Hemolytic anemia (including sickle cell)	51.0	22.1	9.6	19.2
General symptoms	15.0	12.0	2.0	1.0
All	11.3	6.5	2.0	2.8

Rates of any inpatient use were highest among children with hemolytic anemia, foundling children, and children with episodic mood disorders. Very heavy use of inpatient care was most prevalent among children with hemolytic anemia (19 percent had three or more inpatient stays), cerebral palsy (7 percent had three or more), and episodic mood disorders (5 percent had three or more stays).

7.6 Readmission Patterns Among Children Enrolled in HSCSN

Finally, we examined hospital readmission rates among HSCSN-enrolled youth. Among youth with at least one inpatient admission, 39 percent were readmitted within one month. Table 7.11 shows readmission rates for children by qualifying diagnosis. (One limitation to the analysis is that the qualifying diagnosis may not be the diagnosis associated with the inpatient admission or readmission.)

Table 7.11
Readmission Rates Among Children in HSCSN with at Least One Inpatient Admission, by Qualifying Diagnosis, 2007–2008

Qualifying Diagnosis	Percent of Children Readmitted Within One Month
Emotional disturbance	60.4
Other mental retardation	55.6
Conduct disorder	47.1
Episodic mood disorders	44.6
Pervasive developmental disorder	42.0
Cerebral palsy	41.2
Congenital anomaly, nervous system	39.6
HIV/AIDS	39.0
Low birth weight/preterm	35.3
Hemolytic anemia (including sickle cell)	32.1
Hyperkinetic	24.7

7.7 Summary

Below, we summarize key findings related to health care use among children with special health care needs.

- Office-Based and Home Health Care
 - Seventy-one percent of children enrolled in HSCSN had at least one well-child visit and 87 percent had at least one office visit.
 - Approximately 7 percent of children in HSCSN had some home health care during the year. Home health care use varied across children with different health conditions, with the highest rates observed among children with HIV/AIDS or cerebral palsy.
 - While about one-half of children received care through office visits or home health and have no hospital-based care, 5 percent of enrollees had only hospital-based care (ED or inpatient).
 - A substantial fraction of children with mental health diagnoses appear to have had no mental health visits, including nearly three-fourths of children with an emotional disturbance, two-thirds of children with pervasive developmental disorders or adjustment disorders, more than half of children with depressive disorder, and one-third of children with an episodic mood disorder.
- Use and Frequent Use of the ED
 - Forty-two percent of HSCSN enrollees had an ED visit during the year, and rates were highest among the youngest children.
 - The ED rate was higher for HSCSN enrollees compared to the general managed care population in the District (27 percent had an ED visit during the year), but the children in HSCSN had significant health needs.
 - Rates of ED use were highest among children with hemolytic anemia and episodic mood disorder.
 - Approximately 9 percent of enrolled youth use the ED frequently during the year (three or more times), and 3 percent used the ED five or more times during the year.
 - Frequent ED use was most prevalent among children with hemolytic anemia, among foundling children, and among children with episodic mood disorders.
 - Children with developmental delays and hyperkinetic disorder accounted for more than one-third of all frequent ED users and 25 percent of very frequent ED users (5 or more ED visits/year).
 - Sixteen percent of very frequent ED users are children with hemolytic anemia.
- Inpatient Hospitalizations
 - Eleven percent of enrollees had an inpatient hospitalization during the year.
 - Inpatient admissions were most common among those with hemolytic anemia and cerebral palsy.
 - Three percent had three or more inpatient stays during the year.
 - Multiple inpatient stays were more common among children younger than age 2 (9 percent had three or more inpatient stays).

- o Very heavy use of inpatient care was most prevalent among children with hemolytic anemia, cerebral palsy, and episodic mood disorders.
- Among youth with at least one inpatient admission, 39 percent were readmitted within one month.

Perspectives on Children's Health and Health Care Among District Parents, Adolescents, and Health Care Providers

8.1 Overview of the Focus Group Approach and Objectives

In order to interpret some of the findings from the administrative and survey data analyses and to identify specific recommendations for improving health services and the health environment for District children, we conducted focus groups with parents, adolescents, and pediatric providers. These focus groups had three objectives:

1. To gather information about experiences with pediatric health services and to identify barriers and facilitators to obtaining or delivering health services.
2. To understand neighborhood factors that contribute to or buffer against poor child health outcomes.
3. To identify recommendations for improving pediatric health services and the health environment for children.

In the next sections, we describe our methodology and summarize key findings from these focus groups.

8.2 Methods

From March to May 2009, we conducted seventeen focus groups and three individual interviews. These included eight parent groups, two adolescent groups, and seven provider groups. Appendix H summarizes the demographic characteristics of the groups and our methods.

The next sections are organized by thematic area. We offer summary points from each section in bold text following each subhead. Unless otherwise noted, themes are supported across focus group and stakeholder population.

8.3 Primary Care and Immunizations

Parents and providers shared a number of concerns about the receipt of primary care, including preventive services such as immunizations. Their comments also shed light on factors that affect utilization of outpatient services.

8.3.1 Primary Care

Reasons that children miss primary care visits include lack of convenience, difficulty with appointment availability, and perceptions about the lack of quality of primary care services.

We asked provider, parent, and teen focus group participants about their perceptions regarding the low rates of primary care and relatively high rates of emergency department use among District children observed in the Medicaid and Alliance claims data.

Both parents and providers remarked that parents who have a difficult work schedule might not be able to see a provider during normal office hours. These scheduling conflicts and the lack of after-hours outpatient alternatives may contribute to the low rates of primary care use and high rates of emergency department use by District children. One provider noted:

One of the issues that we see is that parents cannot take off work. Most clinics are open Monday through Friday, business hours. They can't get through to get an appointment at a time when they can bring their child, or they cannot go.

Some of the reasons identified as contributing to the time issue included problems scheduling appointments and competing time demands. Parents noted a number of difficulties in scheduling appointments, including getting no response to calls to a provider's office or being routed to another person who is unable to schedule the appointment or answer questions. Many parents stated that pediatric appointment slots fill quite rapidly, especially at clinics that offer a limited time window for scheduling. Several parents commented that they were juggling multiple household and work demands that further delayed obtaining care for children.

Truthfully there are instances when there isn't enough time, and the time that one loses in going and taking the children in the heat, or walking, or because of the cold, they might actually get sicker than they were to start.

Participants noted that some of the use of the emergency department was due to misconceptions about the primary care system. Providers commented that, from their experiences, many parents did not understand that outpatient pediatricians offer treatment for urgent medical complaints as well as routine preventive care. A provider recalled an instance when a parent was asked why she came to the emergency department instead of going to her primary care provider for asthma medications:

[The parent replied] Well a clinic is where I go to get shots and my form filled out. When I'm sick, I go to where the doctors are.

8.3.2 Immunizations

Immunization rates are high in the District, and an expanded immunization registry that can be used regionally and update parents is needed to maintain those rates.

Many children may not have regular preventive care, but according to the providers who participated in the focus group, the District has comparatively high immunization rates. Immuni-

zations are often updated at a number of settings outside of the primary care provider's office, including mobile immunization units. One provider participant commented that recent reductions in the number of these mobile units could potentially affect future immunization rates.

A number of providers commented on the usefulness of the immunization registry, maintained by the District of Columbia Department of Health, which tracks receipt of immunizations regardless of the setting in which they occur. Providers felt that the registry could be improved if it extended regionally, to include immunizations that were administered in Virginia and Maryland. They also thought that the immunization registry could be expanded to track primary care visits that occurred in settings outside of the traditional doctor's office, such as at school-based clinics. Some of the parents noted that it can be difficult to keep up with a child's preventive health schedule. Parents suggested the benefits of periodic reminders for parents that alerted them about when to bring their children in for routine care and immunizations.

8.4 Access to Health Services

Challenges in accessing health services were common themes across both provider and parent focus groups. A number of issues with access were identified, including issues related to insurance, continuity of care, language, and transportation.

8.4.1 Insurance and Continuity of Care

Insurance copayments and insurance reenrollment cause significant problems for parents trying to access child health services.

Cost is a major barrier to obtaining care for children, much less the whole family. Parents argued that health care is one of the last things on the priority list, especially among people who live in poverty. In addition, insurance copayments can be prohibitive. Thus, parents may opt to take children to clinics that they perceive are not providing high-quality services, such as comprehensive physicals or well-child care, but are less expensive. In some cases, they may simply delay care.

Providers and parents both reflected on issues related to continuity of care that were affected by health insurance. Insurance issues can affect the child's relationship with an individual physician and can also influence long-term health care for children with a chronic illness as they transition into adulthood. Many families with Medicaid may unknowingly lose eligibility or be switched to a different health plan. Providers remarked on the difficulties faced because of a Medicaid managed care organization (MCO) requirement for periodic recertification to maintain eligibility. One provider remarked about having a patient with HIV who could not get her HIV medications for four months because her grandmother could not take time off from work to recertify for Medicaid eligibility. Children can also face problems when they are switched to a different health plan. Since MCOs may have different provider panels, these changes may impact the patient-provider relationship and disrupt continuity of care. MCOs also have different medication formularies, causing frequent medication changes, which may add confusion and inconvenience. The perception among both parents and providers was that no system was in place to alert parents to these changes. One provider explained:

Our patients have to reenroll and a lot of them are not aware of that reenrollment process all the time. There needs to be better management for reenrollment, especially if it's linked to TANF [Temporary Assistance for Needy Families], so they can do all their reenrollment at once. . . . It's not that they are purposefully switching plans; they are finding out when they come to the front office to register and they are not covered anymore. . . . There needs to be a gatekeeper to help them.

Continuity of care is a particular problem for children with chronic conditions. One provider remarked that often these patients do not have a medical home with a regular primary care provider, with whom they can identify. These children may need to visit a specialist in one location and a primary care provider in a completely different location who may not know the child well. Parents often use their specialists for many of their children's primary care needs, due to comfort and familiarity. In reference to a parent's use of specialists for primary care, one provider noted:

If they are going to primary care, they are seeing a different provider each time. So they don't feel like they have continuity of care and if they have a chronic illness, they're reexplaining to each new provider what's going on and that's frustrating for parents . . .

Children with chronic medical conditions face additional barriers with continuity as they transition into adulthood. Many children with conditions such as sickle cell anemia, cerebral palsy, and seizures are cared for by their pediatric specialists well into adulthood, because it may be hard for them to get connected to adult specialty providers. In addition, many adult specialists may not take Medicaid or D.C. Alliance. Another provider noted:

I don't think that kids with difficult, chronic disorders like sickle cell or epilepsy will not be cared for in local neighborhoods. . . . But the problem at the hospital becomes, when does it end? For the hospital policy, it is the night before your twenty-second birthday . . . there are certain departments that will turn you down if you're over 18.

8.4.2 Language

The low number of interpreters creates significant challenges for populations with limited English proficiency, particularly newly arrived immigrant groups.

When children from these families have special health care needs, such as developmental disabilities, a language barrier can be a particular challenge for parents who need to navigate an already difficult system. Further, even with an attempt to obtain care, families may face inadequate interpreter resources in both the clinical setting and when they confront administrative hurdles, such as obtaining health insurance. In reference to these difficulties, one parent shared:

They call [an interpreter] and tell us to wait a little bit, and sometimes you have to wait three or more hours. And there you waste the entire day until they arrive.

8.4.3 Transportation

Transportation wait times even with Medicaid vouchers present logistical challenges for parents, and mobile van programs help to overcome these difficulties.

Both parents and providers commented that providers are often not easily accessible in their neighborhoods. Due to the limited availability of neighborhood resources, families rely on transportation services to help them obtain needed care. Transportation, however, is not readily accessible, particularly for the Medicaid population, and is often a major barrier causing parents and children to miss scheduled visits. One provider noted:

I had a patient who had to cancel five times because she wasn't able to get transportation. We are seeing in our Medicaid population that the transportation system they are using isn't very helpful . . . it takes three days to set up.

A number of alternative care settings exist in the community to help parents deal with the barriers imposed by lack of community-based facilities or restrictions in transportation. These include mobile van services and school-based health clinics. However, many participants felt that these services were limited in number and should be expanded. In addition, parents and providers remarked on the need for increased integration of multiple services, such as primary care, specialty care, and social support services, at a central site to address transportation difficulties. When services are co-located with other school events or proximal to their neighborhood, parents noted that many transportation issues can be overcome. Several parents praised the benefits of this approach, as described in this sentiment:

Every summer we have the Back to School Bash and you can come and you can see, you can get the dental, you can get the vision, you can get your shots, you can get almost everything you need to complete your health forms, your physical forms and everything like that. This will be the 9th year, last year it was over at [school]. Parents that came out, they got free school supplies. It was great and well attended.

8.4.4 School-Based Health Care

Schools are identified as sites to improve health care access for children who have transportation issues or who have parents with difficult schedules.

Providers suggested that there should be more planning regarding where school clinics are placed, particularly in areas with scarce medical care. Providers argued that locating more health services in schools would address the problems that parents confront when needing to take time off work to accompany children to doctor's appointments.

In many focus groups, parents questioned whether the school nurses could be utilized in more ways than they are currently (e.g., providing medication, doing more health education); some parents did not know that their school had a nurse. In commenting on the benefits that school-based health care has on improving access, one parent of a younger child shared:

You need to go where the parents are, and if you had school clinics inside of the school system, you'd see a greater number of those pinks and purples [graph showing number of kids who miss primary care each year] going down.

The role of schools and school nurses in providing health services and educating children about health was a priority topic in the focus groups but also a point of contention. While many parents, teens, and providers observed the value of school-located health services and empowering the school nurse to deliver more services, some providers expressed concern that the schools are too overburdened to assume this task.

8.4.5 Coordination of Care

Providers and parents of children with special health care needs describe difficulties coordinating specialty care.

Access is a particular issue for children with multiple medical issues who need coordination of care or who require referrals for specialty service. Providers commented that the Medicaid MCOs do not have a standard, uniform process for referrals, which adds additional administrative challenges. Most providers lacked support to assist with the referral process and were not reimbursed for the large amount of time they often spent coordinating care. Care coordination is better for children covered by HSCSN compared to the other MCOs, since these children usually have social workers who help them with the system. Providers noted, however, that there is no similar support system for other MCOs:

The social support . . . is something I spend a big chunk of my time on. Not having a social worker dedicated to your patient [makes] me the case manager, and [I] become an expert on their insurance limitations.

Parents also expressed difficulties in navigating the referral system, including long wait times for appointments:

You have to jump through hoops, jump through fire, just to get a referral . . . why did it take four months to get a referral to neurology and then I had need to wait another two months to get an appointment?

Not only is this care coordination important for helping children receive referrals, it can also assist in improving a child's home environment. Some providers remarked that for children with chronic conditions, such as asthma, social services should be involved to ensure that living conditions do not add more triggers, which exacerbate illness. Home-based social support is needed to help parents coordinate outpatient nursing care for children who have extensive developmental or physical disabilities.

8.5 Perceived Quality

Parents, teens, and providers shared a concern about the quality of pediatric health services. The main concerns centered on the perceived cultural competency of providers, the respect that clinic or hospital staff members show clients, and time spent in waiting rooms.

8.5.1 Cultural Competency

Parents and teens noted that a lack of provider understanding of their health needs stems from limited awareness of cultural and neighborhood factors.

A lack of cultural competency, specific to the quality of provider interaction and the content of health services, is a critical issue for parents and teens. While language (Section 8.4.2) is a barrier, addressing language issues will not solve the larger problem of cultural appropriateness. While some providers take the time to understand their clients' cultural backgrounds, others have significant gaps in their understanding. There are three aspects of cultural competency that merit discussion: general racial/ethnic competency; neighborhood competency, and developmental competency.

First, provider sensitivity to community resident experience and cultural heritage is not always evident. African American and Latino parents noted that some providers do not acknowledge different approaches to addressing child health issues in the family. For example, parents requested more understanding of the benefits of blending traditional methods from their ethnic backgrounds (e.g., home remedies) with modern medical approaches, or—at the very least—having doctors explain the benefits and costs of the medical approach. Parents do not feel that they are able to have this discussion with many of their providers. Further, there is limited flexibility to explore these approaches in the context of the current array of health services. In addition, Latino parents described instances in which providers did not understand the differences between families that come from Mexico and those that come from Central or South American countries and seemed unwilling to understand how these differences may translate to their perspectives on health. In addition, sometimes providers dismissed the difficulties that the families are experiencing as a result of a new language and culture.

While provider sensitivity is an issue, parents are sometimes not comfortable with receiving health information from a doctor who has a different racial or ethnic background. In this case, having a racially concordant provider-patient relationship may have some benefit. In reference to providing mental health services, one provider shared:

I'd recommend making some of the presentations [school-based mental health programs] with African American presenters, because the parents are saying "I'm not taking kids to this white doctor."

One parent cited clinics like Bread for the City that address these issues of provider diversity well. As she described:

At Bread for the City, they hired someone Indian, Caucasian, and someone Hispanic. Once the lines of communication are open, then you can start giving better treatment to the patient or the family. A lot of parents don't have that rapport—they don't feel like they can call the pediatrician and say why did you give my child this shot.

A second issue concerned general provider understanding and experience working within D.C. neighborhoods specifically. Although some providers work and live close to their clinic or health center, this is a rare occurrence. In addition, many providers have limited experience working in urban, minority communities and have difficulties interacting with their clients as a result. Parents and teens shared that in many cases, they are unable to relate to their provider

because he or she does not “know where they are coming from” or understand the history of the community.

Third, teens raised issues about the developmental appropriateness of health services and the manner in which they are treated. Several youth described instances where health providers talked down to them, and appeared somewhat apprehensive in their interactions with teenagers in general. Further, adolescent focus group participants requested more conversation with providers about their health issues. They also separated themselves from younger children in their ability to have discussions with their provider about prevention and treatment decisions.

8.5.2 Respect

Parents and teens argue that a lack of basic respect from providers and other health staff contributes to a poor health care experience.

Parents and teens shared a perception that the treatment at clinics varied by neighborhood, and this problem was not simply a result of providers who do not live in the neighborhood. A parent of a teenager shared an experience with clinic administrative staff:

And I hate to feel like this but in certain parts of the city you are treated different. At Montgomery County or even in Ward 1, you would go in and be treated a certain way. I hate to be stereotypical but in Southeast or Northeast, they [clinic staff] treat individuals, again, like we are stealing from their pockets, but they are in the same breadline as us.

This lack of respect from clinic staff not only made the visit untenable, but also precluded parents and teens from seeking health services when needed. Participants shared that they would sometimes delay health care when they had to consider how the experience would be at the clinic or hospital.

8.5.3 Wait Times

The wait times are problematic for parents and teens in all health care settings, including emergency departments and community health centers.

Prolonged wait times for a scheduled appointment or in an emergency department waiting room were the most challenging issues cited by many parents and teens. This problem was particularly pronounced in the larger hospitals, including the former Greater Southeast Hospital and Children’s National Medical Center. One parent explained that the change from Greater Southeast to United Medical Center had not changed her experience:

Sit in emergency room for 4 hours—you go through the triage and then just sit there and watch TV until you almost die . . . the only people they actually service are the ones with referrals. It’s not any different than Greater Southeast, they just changed the name but they haven’t changed the entity or the quality of care.

Parents noted that smaller hospitals are able to provide services for their children more quickly, so they have made every attempt to go to those facilities rather than wait at the larger hospitals. However, in some instances, asking an ambulance to go to the preferred hospital is

not negotiable (they go to the closest hospital), and parents expressed great frustration with this rule.

Some health centers received high marks from parents. In particular, THEARC is viewed favorably as the place that understands families, has many types of health services co-located, and does not have long wait times.

I go to 1901 Mississippi, THEARC, I don't have a problem with them everyone there knows me and my family. THEARC is real good.

8.6 Health Promotion, Prevention, and Education

A major gap in health services identified by parents, providers, and teens is information on how to prevent disease in childhood and keep children healthy. The main concerns in this area include parental education about child health, health promotion through the media and school classes, and a true focus on prevention as part of community health education. In addition, parents and teens expressed specific concerns about developing more sexual health and obesity prevention initiatives and focusing more on holistic approaches to health.

8.6.1 Health Promotion and Health Education

Parents and teens called for more emphasis on wellness initiatives and health education in the schools.

First, parents and providers agreed that parental education about child health is lacking. Many parents do not know how to teach children about hygiene and other health behaviors. They lack information about accessing health services for their children and about how insurance works. In addition, parents do not have the tools to teach children about both physical and mental health, and in many instances are struggling with educating themselves about health issues. Many parents said that the reason some of them do not take their children for timely primary care services is this lack of education or health literacy.

Second, general initiatives to improve knowledge about child health from both the media and school-based health education are either inadequate or completely absent. For example, participants noted that many of the education efforts provide data on the consequences of a health risk-taking behavior but do not offer concrete information on what actually occurs if one engages in that behavior. One parent of a young child remarked:

Telling people the effects of smoking isn't the same as SHOWING what happens.

Providers and parents also noted the benefit of group medical settings in helping parents and children learn about preventive care and deal with specific medical issues, such as obesity and teen parenting. Despite the potential benefit in fostering collaborative learning, organized group medical sessions are less available because of billing limitations. For example, providers have to see patients individually to bill for services, and often counselors who run sessions cannot bill insurance. One provider stated:

A lot of our families would benefit from group visits. We have a teen parent group here and one of the things that works really well is a lot of the time when they are waiting for their appointment . . . they talk and learn from each other. If you had a group visit where you facilitated some of that interaction it could really help some of our families.

Third, in addition to desiring improvements in health messaging and school-based health education, residents contended that communication with providers often impedes the useful exchange of health information. Further, they argued that sharing health information in multiple outlets in addition to the doctor's office would address these problems. For example, parents suggested using venues such as neighborhood councils, churches, and parks to disseminate information.

8.6.2 Reproductive and Sexual Health Education

A critical issue for parents and teens is the lack of quality sex education to help prevent teen pregnancy and sexually transmitted infections.

Teen pregnancy and related sexual health issues were priority topics in many of the focus groups—and not simply with parents of teenagers. Rather, this concern extended to parents of younger children as well. Parents shared that they have limited assistance on how to educate their children about sexual health and help prevent pregnancy during adolescence.

Teens also shared that they wanted more health education that used visuals and problem-solving techniques to explain how children can be healthier and protect themselves from disease. One teen explained the preferred format for sexual health education:

They just be like sex is bad, don't do it—They need to get deep into it. Pictures that gross you out. We had this lady she came in middle school, she was there for sex ed and we could ask her about everything, she was real open—I don't know where she came from—but she was real open to us and no matter what we asked her she'd answer straight up.

In addition to preventing pregnancy and sexually transmitted infections, parents and teens expressed concern about the children of teen parents. Specifically, there are concerns (supported by data) that these teen parents do not take their children to the doctor on time and often miss vital preventive services. One teen stated:

Teens don't understand how the health care system works. What exactly they have to pay for and what gets covered and how they get covered so they just avoid it until their baby gets sick.

8.6.3 Obesity and Healthy Eating

Options for healthy foods in schools and communities are needed.

Many providers, parents, and adolescents cite obesity as a major concern for children. Parents and adolescents identified a number of barriers to promoting healthy eating and exercise among children, including cost and the availability of safe sites for exercise and activity within their communities. Often, many of the grocery options for healthy food are limited, and many

parents opt instead for low-cost, fast-food options. A number of parents noted sentiments like this:

Single parents are not going to grocery stores or whatever, they are going to the corner stores for hotdogs and hamburgers.

Adolescents argued that there are many carryouts and fast food options in the neighborhood that make it difficult to find healthy food. One teen explained:

I got three carryouts on one block . . . how can you have three carryouts on one block? They sell junk.

Several parents and adolescents noted that programs offering classes on shopping and cooking healthy foods would be a welcome addition to reduce obesity and improve the health of the entire family. Time is an issue for working parents, making it difficult for them to offer healthy alternatives to their children. Incorporating healthy recipes that can be prepared in a small amount of time and offer durability was cited by several parents.

Parents stated that there are limited options available for children to exercise and engage in physical activity. Frequently, safety issues in many of the neighborhood parks make a positive experience difficult for children. In addition, parents and adolescents noted that many neighborhood parks and recreation centers are unsanitary. While there are recreation centers, most of them are not appealing and often do not have working equipment.

When queried about the current recreation centers, several adolescents argued that these centers were “not up to code” and would not be used by children because of their poor quality. Teens explained that the centers needed to have a standard set of resources, including a field, indoor gym, and indoor pool.

The expansion and quality improvement of parks and recreational options would not only reduce obesity, but would also keep children occupied and otherwise avoid potentially high-risk activity. As parents stated:

[There need to be] more parks in the neighborhood, some do not have a park for the kids to play so they aren't going to have no other choice but to get into trouble.

One parent felt that the schools also had a responsibility to increase physical activity among children by making physical education services an integral part of the curriculum throughout the year.

In addition, there is a lack of services for children who are obese. Many providers observed that there is a provider at Children's National who is particularly good but is often booked, with limited availability for new patients. Some providers felt that a group-counseling model run by a nutritionist would be ideal for children with obesity; however, as noted, such a model is not currently billable. They also explained that there were few resources available for parents to obtain nutrition counseling.

8.6.4 Holistic Approaches

Parents called for more education and opportunities for holistic health and wellness as well as whole family approaches to health care.

As briefly mentioned in Section 8.5.1, many parents expressed concern that there is not enough consideration of holistic approaches to health care. This includes alternative and complementary medicine, including homeopathy, and whole family approaches to health services.¹

Alternative approaches to medicine were points of discussion in the RAND District of Columbia Health Needs Assessment report (Lurie et al., 2008) and emerged as a continuing theme among parents in this pediatric assessment.

Parents shared that many of their peers try to pursue homeopathic approaches as part of a more preventive approach to health, and they have found some success in using these methods.

While success with using less-invasive approaches offered by homeopathy and other forms of holistic medicine was found to be favorable by some parents, there were also other reasons they expressed interest in these methods. First, parents shared a concern that they do not trust providers, and homeopathic solutions that can be researched via the internet are appealing and empowering. Second, costs related to medication and other therapies can be prohibitive.

While more information about alternative and complementary medicine was requested by some parents, other parents expressed an interest in approaches to health that acknowledge the whole family rather than focusing only on the child individually. One parent of a teenager argued that whole family care is the only way to confront issues such as parental health literacy or parental depression, which can impede obtaining timely health services for children:

What do you think a parent does when they are illiterate, 'cause we don't even address that, you know, they are functioning illiterate—they might have mental health issues. It should be FAMILY care, not child care, not adult care but FAMILY care, whole FAMILY care . . . when we go after whole family care that's when I think we'll see other derivatives start to grow.

Further, providers stated that if they were able to embrace more whole-family approaches, they could address the family systems issues that often contribute to poor child health. One mental health provider shared:

Families are like, fix my problem child but it's not going to work because we have an environmentally generated problem. We need to deal with the family system—that's the problem with creating lasting change.

8.7 Problematic Specialty Services

Dental care, mental health care, substance abuse treatment, and services for children with developmental delays were consistently identified as specialty services that were in short supply or plagued by access issues. A limited number of dentists and mental health providers accept Medicaid, and as a result providers have a problem with referrals in these areas.

¹ *Alternative medicine* typically refers to those practices that fall outside of conventional, Western medicine, such as homeopathy, traditional Chinese medicine, and ayurveda (Bratman, 1997). *Complementary medicine* generally refers to the same interventions when used in conjunction with mainstream techniques under the umbrella term complementary and alternative medicine (White House Commission, 2002; Ernst, 1995).

8.7.1 Dental Care

Availability of dental providers is a major problem, and coverage for restorative procedures is lacking.

Few dentists take children with Medicaid. In most cases when care is available, it is limited to preventive care or basic screening services, with few resources for intervention. The school dental program, for example, provides screening but does not provide any restorative dental care. One provider noted:

We found out one of the top reasons for ER visits is because of dental issues, there is a huge lack of access in the Medicaid population.

Many providers commented that the city should take aggressive steps to increase the number of dentists who accept Medicaid. One suggestion was to improve reimbursement, particularly for restorative services. Another option frequently mentioned was offering loan repayment programs or tax incentives for dentists who practice in underserved communities or who have practices with large numbers of children with Medicaid. Many providers and parents felt that the school was a good resource for children to obtain dental care given the lack of community-based providers; however, services should be extended to include interventional care when dental problems are identified through basic screening. Providers also mentioned that having a central resource, equivalent to an ACCESS line, to help providers locate and obtain appointments with dental providers who take children with Medicaid would be helpful.

Parents expressed similar frustrations with the shortage of dental care, particularly in certain parts of the city and for children with Medicaid. Parents also felt that the school should have increased access to dental services. Parents commented:

Older kids with Medicaid with problems with dental, lots of places don't have Medicaid; you have to go cross-country to find dental for a kid. All the good [dentists] don't take Medicaid.

Dental health and vaccinations used to be in the school, when I was in school, when my children were in school, the dentist came to school twice a year. Why did they take that out of schools?

8.7.2 Mental Health

The number of pediatric mental health providers, time to provide quality care, and stigma are major service barriers for mental health.

Mental health has also been identified as a challenge for children in the District. There are limited options for children who have special mental health needs to obtain services. Although some of the primary care providers who participated in the focus groups offered some basic mental health care services, they felt that, ideally, children benefit from mental health specialty care, particularly when medication intervention is needed.

School-based mental health care was cited as an option used by many primary care providers. Often, however, the care is fragmented, without communication between primary care providers, school-based mental health providers, and offsite mental health specialists. Many

school-based mental health providers are responsible for myriad programs but often feel over-extended due to pressures to provide both preventive interventions and counseling for active mental health issues. School mental health providers remarked that behavioral issues are particularly prevalent in schools, but it can often be difficult to get children out of classes to obtain adequate time for counseling sessions. When children require more acute care, school-based providers will seek care through a child's managed care program or through the community service agencies. However, in many cases there is inadequate feedback from these outside providers about treatment plans.

Although providers in the school or office setting may identify a mental health need and try to help locate further resources for care, it is the parent's responsibility to take a child to receive specialized mental health care. It can be difficult for a parent to navigate the mental health system. A number of providers noted that many of the children with mental health issues also have parents at home with active mental health issues. Helping parents obtain mental health care for themselves while also ensuring that they follow up to receive care for their children is a barrier that can be difficult to overcome.

Many MCOs authorize only a limited number of visits for treatment, which often do not adequately meet the child's mental health needs. Finding a provider is particularly difficult if a child does not have insurance or if the child's plan does not provide extensive mental health care. Providers expressed a need for better case management services to help parents navigate the system to obtain mental health care. In addition, they noted that children with Medicaid have few places to go for long-term mental health services.

Stigma related to mental health and mental health service-seeking is an issue cited by providers in particular. School-based mental health providers shared that when they meet with parents, some are reluctant to have their child receive mental health services, but one-on-one conversations can address these concerns. Additionally, many parents do not see the necessity of mental health services, linking use of services to a lack of toughness. Several providers called for a citywide educational campaign to address the stigma associated with mental health issues.

Parents may have experienced the same trauma or abuse and they feel like they survived without mental health services so they think the child should be able to do the same.

Stigma related to mental health issues also extends to many other chronic diseases, such as HIV and developmental disorders. One provider remarked that despite large investments in clinical care, without addressing the mental stigma associated with chronic diseases such as HIV, treatment will be limited. Many children will engage in risky behaviors despite a diagnosis of HIV simply because they are ashamed to admit to a partner that they have tested positive. Children with HIV and other chronic conditions have particular mental health needs to help them deal with this stigma but often are unable to receive care.

8.7.3 Substance Abuse

There are limited resources and a lack of education about substance use and abuse.

Although substance abuse prevention is included in most school-based mental health programs, some teen focus group participants remarked that education about substance abuse prevention is often ineffective. For this education to have a greater impact, teens felt the need

to visualize the effects of high-risk behaviors, such as drug use, similar to their thoughts about incorporating visualization into sex education.

Many providers noted that substance abuse is very common among children; however, there are limited resources available for substance abuse intervention. Most of the resources for treatment that are available through the city are targeted toward adults. One provider remarked that she knew of no programs in the District to which to refer her adolescent patients with substance abuse issues.

APRA [Addiction Prevention Recovery Administration] has no real significant adolescent drug treatment capacity. The number is just an intake—it's an intake interview at best—someone to assess services.

8.7.4 Early Intervention

Early intervention services for children are often delayed because there are few resources or specialists.

Some providers and parents expressed concern about obtaining early intervention services for young children on time. Providers stated that resources for children identified with developmental delays are often inadequate, and specialty care is difficult to obtain. Providers also felt that obtaining psychoeducational testing was a particular challenge for children. One provider described the frustration about the lack of services:

I've been here three years and I still can't figure out the right system to refer a kid to early intervention. . . . To get them an appointment with a developmental specialist is months away but those are the prime months, you want to start those kids right away.

8.8 Foster Care

Foster parents request more help in accessing a child's medical history and obtaining mental health services.

We conducted one focus group specifically for parents of children in the foster care system. In this focus group, as well as in many of the provider focus groups, a number of challenges were identified for this population.

Foster parents were concerned about the confusion about a child's medical history. Many cited problems with obtaining complete health information from the last foster placement or the caseworker, and this often led to delays in care. Parents recommended a more centralized database with information on children's medical and social service use, where they could more readily access the child's Medicaid number and identify which providers would see their child.

Parents of foster children also noted challenges with obtaining specialty care. Many foster children have mental health needs, but because of the limited resources available in the community, psychiatric care is often not readily accessible or is disjointed, even when court-ordered.

Many providers felt that health care was fragmented for children in the foster care system. Although the city has stressed the need for foster children to be integrated into the community, providers remarked that the Child and Family Services Agency (CFSA) is adopting a new policy in which medical intake exams will occur on site (at CFSA) instead of at the community clinic setting. Providers felt that this would not only remove children from an established medical home, it would also make it more challenging to obtain specialty services, such as mental health care, which are already difficult to access for this population.

8.9 Key Recommendations from Focus Group Participants

A key element of our focus group discussions was to solicit recommendations from the participants about strategies to reduce barriers to care and enhance the quality of pediatric health services. In addition, initiatives or policies that are needed to improve neighborhood factors related to health were discussed. The next sections detail these recommendations. In some cases, we provide additional detail about programs referenced by the participants.

8.9.1 Primary Care and Immunizations

Educate families about use of primary care providers for nonurgent medical complaints in order to decrease emergency department utilization.

Many parents and adolescents explained that families often use the emergency department as a first resort, partly because they have no regular doctor and partly because they did not see the ED experience as particularly different from the traditional primary care experience (e.g., time, quality). Families would benefit from education about the benefits of having a medical home for their children. Further, continuing the expansion of primary care services in the District would help to address these concerns about wait times.

Expand the role of school-based health services in providing primary care.

This includes allowing medical providers to practice in the school or school-based health clinic and bill for primary care services rendered in this setting. In addition, participants advocated increasing the number of school-based health clinics, particularly in wards with poor access to community-based providers.

Expand the immunization registry to the greater Capital region and link primary care information.

Providers suggested including Virginia and Maryland in the immunization registry to ensure that immunizations provided outside of the District are included. In addition, they suggested that the registry include data about the receipt of primary care services. Currently, this information is not linked across services, and therefore information on a child's health status is disjointed. Further, parents requested a reminder system to alert them when preventive care, such as immunizations, is needed. They also suggested using the alert system for reminders about routine primary care for their children.

8.9.2 Access to Health Services

Increase the availability of electronic health records and make sure these data are linked across services to address fragmentation.

Developing a centralized system for electronic health records should ensure that primary and specialty service data are linked. In addition, providers suggested using this system to link data on social service use with health care, which is particularly important for pediatric populations. Further, there was interest in linking school-based service data with the electronic medical record system, so that data are accessible to managed care organizations and community-based providers.

Eliminate the requirement for recertification for Medicaid enrollment to ensure that children will maintain continuous care.

In several provider and parent focus groups, the issue of insurance continuity emerged as a barrier to care. In particular, parents were frustrated by not knowing when their children's enrollment had expired, and then meeting delays in care as a result.

Expand the range of services available in schools to include some treatment services.

Throughout all of the focus groups, there was an interest in expanding the role of school-based health suites and clinics to provide not only primary care but also treatment services. This includes well-child visits and restorative dental services. Participants also requested improvements in the linkages between pediatric providers and schools for continuity of services and care coordination. Parents suggested using the schools to provide on-site health services at the start of school years (e.g., well-child and dental care).

Co-locate primary and specialty care services.

Providers and parents argued for more co-location of health services. Parents recommended more community-based, pediatric "one-stop shops" where they could obtain well-child care as well as vision and dental services for their children.

Improve care coordination for health and social services.

Providers and parents discussed the confusion around negotiating medical and related social services. Providers suggested enhancing the use of patient navigators to work with families who use multiple services. In addition, they advocated for more social workers at hospitals and clinics and better reimbursement for social service coordination. One example of a program that employs care coordination and that was cited by participants is Improving Diet, Exercise and Activity for Life (IDEAL). This is a multidisciplinary obesity clinic for children ages 2–18 at Children's National's Goldberg Center. IDEAL pulls together psychologists, dietitians, and exercise therapists, as well as nurses, physicians, and specialists for children who are at risk for clinical obesity. Children are tracked by this team systematically, and care is coordinated.

Expand the use of the mobile van to provide more health services.

Many parents spoke favorably of the mobile van program but requested that the services be expanded beyond immunizations. They suggested using this program to provide counseling sessions and to offer health education, including the distribution of condoms.

Improve language support services for immigrants and children for whom English is a second language.

The issue of language as an access barrier was particularly pronounced among Latino residents. It is critical to expand interpreter services in the clinical setting as well as in the administrative setting. Further, residents suggested greater enforcement of Medicaid guidelines about access to an interpreter.

Increase the number of clinics with flexible hours.

Many residents shared that clinic hours were problematic and requested that more clinics extend their hours into the evening on weekdays and on weekends, particularly on Saturdays for children.

Decrease wait times by increasing provider supply and diversity.

Parents were quite frustrated with wait times at clinics. Not only did they suggest increasing the number of available providers (e.g., via incentives), they also argued that nurses were being underutilized. They felt that nurses and nurse practitioners may be able to provide more services, which would reduce their overall wait time.

Address the advance notice requirement for transportation services.

Many providers cited that parents could not bring their child for timely medical services because they did not have transportation. Providers suggested that the advance notice requirement (cited as three days) for transportation services under Medicaid was a major barrier, and they recommended lifting that restriction so that parents could schedule same-day services.

Identify more options for low-cost prescriptions.

Many parents were concerned that many of the prescriptions they need to fill for their children are not covered well by insurance. They suggested exploring opportunities to fill certain prescriptions at lower cost, and recommended more research on less-expensive options.

Use more home-visiting programs for primary care and health education.

Healthy Start, a federally funded program that works with expectant mothers to improve health outcomes, was touted as a successful home-visiting model in the District. Residents recommended expanding home-visiting options for families with older children and using home visits to provide primary care, focus on prevention, and offer health education. They argued that this would address some of the access issues faced by hard-to-reach families.

8.9.3 Quality of Care

Develop a performance-based system of accountability that regularly includes client perspectives and has health providers evaluate each other.

This was a common recommendation from parents and adolescents who felt they had no input into the quality of care that they received. They also argued that there were no incentives for providing high-quality care or consequences for failing to do so. Parents and teens requested more opportunities to evaluate providers and health settings on a regular basis.

Offer providers training on cultural competency that includes attention to race/ethnicity, District culture, and child development.

Parents and adolescents suggested that providers need more information on how to interact with residents, particularly with attention to cultural differences. They felt that providers did not have the appropriate sensitivities or knowledge of residents' lives and their perspectives on health and health care. Training developed by parents and adolescents was recommended.

Use a neighborhood committee model to identify priority health issues for children and to create appropriate strategies and programs.

Focus group participants appreciated the unique opportunity in this study to make their recommendations for addressing child health issues. However, they felt that this input should be gathered on a regular basis and wanted more of a role in decisionmaking to improve the quality of health services and their neighborhoods. Participants cited Marion Barry's Green Council as a successful model. The Green Council has worked to develop an urban farm and advocate for more lighting at parks in Ward 8. A model like this could be used in other neighborhoods to discuss health service improvement.

Create more partnerships between health providers and neighborhood organizations, to enhance care coordination and health promotion opportunities.

Many providers and parents said that the overall quality of pediatric health services would be improved if there were greater linkages between health care providers in hospitals and community clinics and supporting community-based organizations. This would allow for more-streamlined activities around health promotion, and it would also ensure that services were being enhanced and not duplicated. One example mentioned in the groups was The Family Place. The Family Place is a D.C.-based program, founded in 1980. This drop-in community center provides hospitality resources and support to 416 low-income, underserved families with young children. The Family Place includes free programs for families, such as Spanish literacy, prenatal education, and nutrition education. The center partners with a number of groups in the D.C. area, including Children's Hospital Community Health Center (Adams Morgan Clinic), as well as D.C. Central Kitchen, the Consulate of Mexico, and Mary's Center for Maternal and Childcare.

8.9.4 Health Promotion, Prevention, and Health Education

Emphasize prevention by establishing holistic health and wellness centers.

Parents articulated great interest in identifying ways to learn more about wellness, prevention, and the use of complementary and alternative medicine. Parents recommended offering more opportunities to integrate holistic approaches into traditional allopathic medicine and providing places for wellness education.

Expand opportunities for child and parent health education.

Many focus group participants argued that there were not enough opportunities to obtain information about health, including how to maintain good health and how to access health services. They recommended several strategies, including the following:

- Provide more opportunities for health education, including community forums, places in health clinics for information posting and exchange, and health classes.
- Enhance the quality of school-based health education. Expand the role of health promotion in the classroom and invite providers to lead health education sessions. Educate teachers about health promotion and mental health.
- Use more peer-education programs for health education.
- Address parent health literacy about child health with parent group education sessions.
- Use technology that appeals to youth (e.g., texting) to share health education messages.
- Increase education campaigns, particularly in addressing obesity, sexual health, and mental health issues. Mental health campaigns should focus on stigma reduction. Participants cited programs such as the Good Hope Road program on puberty issues, Today's New Teens (TNT)—a series of three workshops at Children's National Medical Center to help teens learn to make responsible sexual decisions—and the sex education program at Cesar Chavez School.

Improve the availability and quality of resources in recreation centers, including more mentoring and counseling.

Many adolescents explained that while there are recreation centers in the District, most of these centers do not have adequate equipment for sports, dance, and other activities. Also, many adolescents and parents recommended expanding mentoring programs. They cited the example of the Teen Life Club (TLC) (sponsored by Children's National) as a possibility to expand citywide. The TLC is a year-long program designed to help teens ages 11–14 build life skills. The clubs also provide mentors, academic support to participants, and parent workshops. TLCs hold homework clubs and weekly sessions for male and female adolescents on such topics as personal identity, healthy bodies, and financial literacy. TLCs provide incentives to participants, such as a weekly stipend, free snacks, prizes, and gift cards. While this model may be too intensive for all youth, elements could be transferred to other settings.

Develop more teen clubs, or places for teens to congregate on nights and weekends.

Teens expressed frustration with not having appropriate places to socialize after hours. They argued that the absence of these places simply invited teens to engage in less-healthy activities. Teen clubs would appeal to adolescents because younger children would not be allowed. The club could have music and dancing, and the place would be safe.

Improve the cleanliness and safety of parks and neighborhoods.

Many parents and adolescents were concerned that the quality of their parks and neighborhoods affected their ability to exercise or to feel good about their neighborhood. Some residents recommended more police to patrol neighborhoods. They also described how improv-

ing the cleanliness of their neighborhood, by enforcing routine trash collection and mandates about property cleanliness, would positively affect neighborhood pride and general mental health.

Increase the availability of healthy, inexpensive food options in the neighborhood.

Access to quality food was a major concern of focus group participants. They explained that they rarely have stores with fresh produce, that the food at carryouts is not healthy but is accessible, and that school meals are not nutritious. Many residents cited the SHARE program as one that should be expanded. The SHARE program was started in San Diego in 1983 and brought to the District in 1990. SHARE program participants volunteer for two hours and pay \$19.00 monthly in exchange for approximately \$40.00–\$45.00 worth of groceries. Adolescents, who expressed concern about the school meal options, also praised the Hyde School program, where students prepare their own meals.

8.9.5 Specialty Services

Ease the referral process across MCOs to use a universal system that can be easily accessed by providers.

As described earlier, the use of an electronic record system that includes information about referrals and specialty services received would help ensure that patient data are centralized and readily accessible. This was a major problem cited by providers trying to link primary and specialty care data.

Improve specialty feedback to primary care providers through an online system that provides access to specialists' notes and recommendations.

Providers also argued that there was suboptimal communication between primary care and specialty care providers, and primary care providers often did not know what the treatment plan was for children under their care. Greater access to these notes was suggested as one possible way to improve communication.

Increase the number of dental providers and mental health providers who care for adolescents and children with Medicaid.

Improving Medicaid reimbursement and adding provider incentives to encourage these specialists to practice in underserved communities would help address significant unmet dental and mental health need. Providers suggested tax incentives for their practices and loan repayment options.

Expand the number of providers caring for children with obesity.

Many providers felt that there are not enough providers who have the knowledge to work with children struggling with obesity. They also suggested increasing funding to support more nutritionists.

Develop guide for District schools on student mental health issues.

School mental health providers suggested that schools, including the D.C. public schools, would benefit from more information on student mental health. This includes information on

signs and symptoms and service availability. Further, they urged that schools develop plans to coordinate school-based providers who may address student mental health issues in the same school but often do not connect services or communicate well (social workers, school mental health clinicians, counselors).

8.9.6 Youth in Foster Care

As described earlier, we conducted one focus group with foster parents to understand their unique issues accessing health services for their children. Key recommendations include:

- Work with systems in Virginia and Maryland, given that District foster youth live in neighboring states. This will ensure coordination of information and no disruptions in services.
- Invest in more outreach programs to address mental health and related issues for foster youth.
- Create a hotline for foster families to get information about services, including health services.
- Develop a reference guide for foster families that has updated information on health and social services.
- Keep health care for children in the foster care system within the realm of community clinics so children can maintain a medical home across changes in residence.

8.10 Summary of Findings

Our focus groups highlighted a number of challenges to receipt of primary care in the District, as well as issues related to access. The groups offered insight into the relatively low rates of primary care and high rates of emergency department use by District children on Medicaid and Alliance. We also learned about problems with coordination of care, transportation services, and language barriers. Certain programs were found to be particularly helpful in overcoming access barriers, such as mobile health vans and school-based clinics, although parents expressed a need for expanded services in these areas. Parents also expressed a concern about improving quality of care, including increasing provider cultural competency, improving respect in the clinic setting, and decreasing wait times. Many also wanted to expand health promotion and education and to include holistic approaches in the clinical setting. Dental care, mental health substance abuse intervention, and services for children with developmental delays were noted as particularly problematic for children because of the limited availability of providers in the District that take Medicaid. Children in the foster care system, who tend to have a number of mental health needs, face additional barriers, which may be exacerbated when care is shifted away from the community.

Section III

Implications for Improving Child Health

Summary and Recommendations

In this chapter, we translate our findings into recommendations, both general and specific. Some recommendations are relevant to District policymakers; others apply more generally to individuals and organizations interested in improving health among District children. Where appropriate, we offer examples of interventions that could be implemented. Our inclusion of these examples is not meant as endorsement but rather as a way to share evidence-based options. Ideally, the District would review these recommendations collectively to develop an integrated and holistic strategy to improve child health and to test selected initiatives.

9.1 Continue the District's Commitment to Health Insurance Coverage

Most children in the District have health insurance. The rate of uninsurance in the District (an estimated 3.5 percent of children in 2007) is lower than the national rate of uninsurance among children (an estimated 9.1 percent, based on NSCH data). In times of intense budget pressure, the District needs to maintain its commitment to ensuring the availability and accessibility of insurance to all children to sustain the remarkable levels of coverage it has achieved. Further, ensuring insurance continuity is also important. District parents and providers raised concerns about gaps in insurance coverage for children related to reenrollment or recertification. Providing more assistance to parents during recertification, longer time periods between recertification, and/or administrative (or “passive”) renewal procedures may help secure continuity in coverage.

9.2 Implement Strategies to Increase Children's Access to and Use of Primary and Specialty Care

Despite the encouraging finding that most District children have health insurance and have a medical home (as reported by their parents), access to care among the pediatric population nonetheless appears to be limited in several problematic ways. First, parents in the District are more likely than parents nationwide to report having difficulty seeing a specialist (12 percent versus 8 percent). District parents, teens, and providers noted particular difficulty accessing dental and mental health care as well as developmental assessments. In addition, ACS-IP rates, which are related to the availability and efficacy of primary care, *increased* among the youth population in the District between 2004 and 2007, suggesting a worsening trend in access to or quality of ambulatory care. The most notable increase was among children ages 0–4.

Among publicly insured children specifically, rates of office-based health care use in the District appear to be well below national rates. At the same time, rates of hospital use among publicly insured children were substantial. For example, among nondisabled children in managed care, about 27 percent used the ED during a given year; among disabled children in managed care, that figure was 42 percent. Further, a segment of the publicly insured youth population appears to use the ED heavily (more than 3–5 times per year), possibly as a primary source of care. Finally, inpatient readmission rates among publicly insured children show room for significant improvement.

Barriers to better access to primary and specialty care in nonhospital settings are multiple and complex; consequently, solutions to improve access must be multifaceted. Factors limiting access to ambulatory care include provider availability and perceived quality.

9.2.1 Provider Availability

At least some of the access problems have to do with the availability of primary and specialty care providers. In focus groups, District parents indicated that availability of appointments for primary care was a key factor limiting access. Further, both parents and providers pointed to limited availability of off-hours ambulatory care (evenings, weekends, early mornings). With regard to specialty care, available data suggest that the distribution of pediatric specialists is uneven across locations throughout the city and is not correlated with children's health care needs. A particular dearth appears to exist for pediatric mental health specialists east of the Anacostia River.

Strategies. One or more strategies might be invoked to address deficiencies in the health care delivery system, improve access to primary and specialty care among District youth, and decrease reliance on hospital-based care. The recommendations here echo those in Lurie et al., 2008, that addressed similar issues for the broader population of District residents as a whole.

Capacity-building efforts made possible through investment of the tobacco settlement fund have the potential to improve accessibility of ambulatory care for children; continued support for these efforts and potential investments targeted specifically at primary care capacity for children are essential. There are two important aspects to this capacity-building—investments to increase the availability of primary care through expansions of community health centers and complementary investments to increase the availability of urgent care. The co-location of primary and urgent care is important for increasing the continuity of care between urgent and primary care settings and for cultivating patterns of care-seeking among District parents that emphasize office-based and other nonhospital-based care.

Also important for building primary care capacity is a sufficient supply of providers who serve children with public insurance. Increasing the network of such providers may require more adequate reimbursement (although increased provider reimbursement levels were recently implemented in the District), speedier reimbursements to providers, and other incentives, such as support for electronic health record implementation in exchange for participation with Medicaid and/or Alliance, as well as reimbursement for case managers, to help children who have particularly complex needs.

Specialty-care capacity may also improve by investing tobacco settlement funds, to the extent that the community health center expansions from these funds incorporate space for specialty care providers and that clinics are able to negotiate with providers to provide services on-site. However, other incentives to increase the specialty care supply may be necessary and include loan repayment (such as through the D.C. Health Professional Loan Repayment Pro-

gram) and changes to the level and speed of Medicaid reimbursement for specialty care. Some strategies, such as “e-referrals,” may help reduce the need for specialty care appointments. E-referral communication between a primary care physician and specialist may include specific questions, patient health information, and digital photographs, for example. Adequate health information technology and appropriate reimbursement policies are prerequisites, however.

9.2.2 Quality of Services

Capacity is not the only factor limiting the accessibility of ambulatory care, however. In focus groups, District parents, teens, and providers noted several issues. These included a perceived lack of understanding among providers of cultural and neighborhood issues important to their health care, the developmental appropriateness of health services for adolescent youth, health care providers’ general approach to and communication style with adolescents, limited availability of interpreters and/or providers who speak languages other than English, the inaccessibility of providers and challenges with existing transportation assistance services, and the limited amount of health education and health promotion available in schools and community settings. Finally, providers noted that the managed care organizations serving District patients do not have a standard, uniform process for referrals, and patients and providers sometimes face significant administrative challenges to receiving authorization for specialty care.

Strategies. Strategies focused on issues other than capacity are also important. With regard to specialty care, a clear need exists to standardize and facilitate the process of authorization for specialty care services for managed care patients. Other strategies are needed to address quality-of-care issues raised by parents and adolescents. First, and perhaps foremost, is the need for timely and periodic assessment of youth health care by purchasers, including not only assessment of access to care but also collection of data around the patient experience. For example, community residents’ ideas about a performance-based system of accountability that regularly includes client perspectives on quality of services could be tested. Further, interventions to improve the cultural competence of providers and their approach to adolescents and parents are needed. Provider training programs that focus not simply on race/ethnicity differences in health perspectives but also on neighborhood characteristics and child developmental stages may address these concerns regarding patient treatment. In addition, participatory strategies that include parents and adolescents in creating and/or reviewing this training content are important.

9.3 Focus Interventions on Children with Particular Health Conditions

Particular health conditions warrant special attention because of their prevalence, importance to health, and/or the patterns of health care use associated with them. This recommendation focuses on engaging in targeted efforts to improve health and health care among children with these conditions. Given community resident interest in addressing child health needs, neighborhood committees should be considered as partners in intervention selection and implementation.

9.3.1 Asthma

Among children in Medicaid/Alliance managed care and FFS Medicaid, 8 and 5 percent of enrollees who use services, respectively, had asthma. Asthma was one of the top ten most prevalent qualifying conditions among children enrolled in HSCSN. Children with asthma use substantial hospital-based services. For example, asthma contributed to between 11 and 16 percent of inpatient hospitalizations in 2007 among all District youth ages 0–13, and asthma was one of the most common conditions associated with ACS-IP hospitalizations among youth ages 0–17.

Strategies. Interventions that teach children asthma self-management may need to be implemented more widely. For example, short-course asthma training programs for children, either administered by school nurses (Persaud et al., 1996) or other pediatric providers (Lewis et al., 1984) have shown promise in improving asthma knowledge and behavior. An older program, the Asthma Control Program (ACT), which consisted of parent and child educational sessions, resulted in significant reductions in hospitalizations and ED visits associated with poor asthma management (Lewis et al., 1984). More recently, the use of multimedia approaches for asthma education have shown promise. For example, the Interactive Multimedia Program for Asthma Control and Tracking (IMPACT) consists of vignettes and animated lessons covering environmental triggers, quick-relief and control medicines, and strategies to control and manage asthma. This program has demonstrated improvements in asthma knowledge and decreases in the experience of asthma symptoms and use of the ED (Krishna et al., 2003).

9.3.2 Mental Health Conditions and Developmental Delays

A substantial fraction of children in the District experience mental health problems or developmental delays. For example, among children in HSCSN, nearly two-thirds of the qualifying diagnoses for HSCSN were mental health or developmental disorders, and among children in Medicaid/Alliance managed care and FFS Medicaid, between 4 and 14 percent of enrollees, respectively, who used services had a mental health disorder or developmental delay. Mental health conditions contributed to 13–14 percent of inpatient stays among those ages 5–17.

Such disorders are a substantial contributor to hospitalizations among youth. For example, mental illness was a factor in between 3 and 5 percent of ED visits among older youth and young adults. Episodic mood disorders, in particular, were associated with a substantial fraction (between 8 and 10 percent) of inpatient hospitalizations among District youth ages 5–17. In addition, among managed care enrollees, the inpatient hospital readmission rate was higher in instances where the initial inpatient admission was related to a mental health issue.

Further, available evidence suggests many children with mental health disorders are not receiving adequate nonhospital behavioral health care. For example, one-third of children with episodic mood disorder in HSCSN did not appear to have a mental health visit (home or office-based) during the year. The same was true for nearly three-fourths of children with an emotional disturbance, two-thirds of children with pervasive developmental disorders or adjustment disorders, and more than half of children with depressive disorder.

Strategies. Attention must be given to increasing access to behavioral health care and decreasing inpatient hospitalizations among the population of children with mental health disorders. This should include not only increasing the availability of behavioral health care specialists, particularly in areas east of the Anacostia River (especially for publicly insured children), but also making new efforts to help parents navigate the system of accessing mental health care, working to address perceptions of stigma associated with seeking care for mental

health issues, and possibly providing supplementary support for school-based mental health care. For example, there are promising approaches to decrease stigma related to mental health, most notably the MindMatters program (Wyn et al., 2000; Evans et al., 2005) and Breaking the Silence (National Alliance on Mental Illness)—school-based efforts that have parental engagement elements. In addition, efforts to directly engage the African American community on mental health issues, such as the Promoting Emotional Wellness and Spirituality (PEWS) program (National Alliance on Mental Illness), could help to address stigma.

9.3.3 HIV/AIDS

The District had the highest rate of newly reported cases of AIDS in the country. Among children under age 13, 86 percent of new HIV cases progressed to AIDS within one year. Sixty percent of cases among those between ages 13 and 19 progressed to AIDS within one year of diagnosis.

Strategies. Increasing the availability of antiretrovirals to slow the progression to AIDS among youth should be a priority. In fact, global models such as the antiretroviral program developed by the U.S. Agency for International Development may be reviewed for strategies that could be replicated in the District, including non-U.S. models of drug purchasing, marketing, and distribution. Key components for success in these programs include strong infrastructure for drug procurement, development of supply chains, and employment of community health workers to enhance patient compliance.

9.3.4 Sickle Cell Anemia

District children with sickle cell anemia had high hospitalization rates. For example, more than three-fourths of children with sickle cell anemia enrolled in HSCSN had at least one ED visit during the year. Further, nearly 30 percent of HSCSN enrollees with sickle cell anemia were heavy ED users. More than half had at least one inpatient stay and 19 percent had three or more inpatient stays.

Strategies. In order to address the high rates of hospital use among children with sickle cell anemia, more investment may need to be made to provide case management and home visits for families to help manage the disease and to develop a regional care system for patients with the disease to ensure proper access to health services outside of the ED (Johns Hopkins Bloomberg School of Public Health, 2007).

9.3.5 Obesity/Overweight

Rates of obesity/overweight among children are high and have been rising across the United States, and the District is no exception. Among District youth ages 6–12, 19 percent are reportedly obese and an additional 15 percent are overweight. Similarly, 15 percent of District youth ages 13–17 are obese and an additional 15 percent are overweight. Some data suggest that overweight and obesity are even *more* of an issue in D.C. than nationally: A greater percentage of youth in grades 9–12 are obese in the District (18 percent) than in the nation (13 percent).

Strategies. One strategy to address obesity and overweight is to increase the availability of healthy foods in schools and communities. For example, the Healthy Stores project (Healthy Stores, n.d.) engages communities and grocery stores to develop culturally appropriate interventions that increase the supply of healthy foods and promote their purchase. In addition,

despite the availability of recreation centers and parks, many residents said that these spaces were not well distributed throughout the city and did not have an adequate supply of quality equipment. Therefore, more assessment of the quality of these programs (and not simply the presence of recreation facilities) and investment in developing these centers should continue. Further, there is a limited number of nutritionists to support weight management for those children who are overweight. Increasing the supply of these professionals is critical.

9.4 Implement Strategies That Emphasize Prevention and Wellness

Ideally, the strategies to address any one health behavior or health issue would be part of an integrated plan to improve child health more broadly. For example, intervention programs, such as Know Your Body (Taggart et al., 1990), that are comprehensive and skills-based would have potentially greater impact on enhancing wellness, a theme that emerged in the resident focus groups. Know Your Body has been implemented in urban settings and focuses on making changes in diet, physical fitness, and smoking. Benefits of the program have included reduction in cholesterol and blood pressure, and greater reported intake of healthy foods (Resnicow et al., 1992).

In the next sections, we highlight intervention examples that could be effective in addressing key health issues in the District and are particularly focused on prevention or early intervention. These examples are intended to complement the list of current efforts in the District that have been implemented by the school system, the Department of Health, the Department of Mental Health, or various community-based organizations. A comprehensive analysis of which programs are best suited for particular areas of the city (based on dimensions of appropriateness, feasibility, and potential impact) is an essential next step.

9.4.1 Mental Health

As described, mental health remains an issue in the District. Given that mental health is a major factor in health service use, more attention should be paid to preventive interventions that enhance emotional well-being.

Strategies. Several proven school and community-based programs could be implemented to address these issues. For example, the Incredible Years program is a set of comprehensive curricula targeting children ages 2–10 and their parents and teachers (Webster-Stratton, 2001). The curricula are designed to work jointly to promote emotional and social competence and to prevent, reduce, and treat children's behavioral and emotional problems. The Coping with Stress Course (CWS) targets adolescents at risk for depression who are experiencing elevated depressive symptoms. The program involves cognitive-restructuring techniques in which participants learn to identify and challenge negative thoughts that may contribute to the development of a future mood disorder. CWS is an adaptation of the Adolescent Coping with Depression Course (Clarke, Lewinsohn, and Hops, 1990), which targets adolescents already experiencing major depression or dysthymia.

9.4.2 Violence

Experiencing and being exposed to violence, including school safety issues, continue to be major problems in the District. Many youth (14 percent) reported fears about school safety, more than double the national average (6 percent), and violence-related mortality is very high.

Strategies. To decrease engagement in violent behavior, violence prevention programs are likely needed at a greater scale than currently available in the District. Programs such as Second Step: A Violence Prevention Program, which is a classroom-based social skills curriculum for students from preschool through middle school, shows promise. This curriculum has reduced impulsive and aggressive behaviors and increased protective factors and social-emotional competence (Grossman et al., 1997). Organized by grade level, the program teaches children empathy, problem-solving skills, risk assessment, decisionmaking, and goal-setting skills.

For those youth who have been exposed to violence, the anxiety and trauma associated with the experience needs to be addressed. Initiatives such as the Cognitive Behavioral Intervention for Trauma in Schools (CBITS) program, aimed at relieving symptoms of post-traumatic stress disorder (PTSD), depression, and general anxiety among children exposed to trauma, has been initiated in the District and could be implemented more widely (Stein et al., 2003).

9.4.3 Sexual and Reproductive Health

Teen pregnancy rates decreased steadily in the District between 2002 and 2007; however, recent reports indicate that these numbers are increasing again. Further, the percentage of District youth reporting sex before age 13 years (13 percent) was nearly double that nationally (7 percent). Rates of chlamydia and gonorrhea infection were nearly three times the national average.

Strategies. A greater focus on sexual health education, particularly strategies that help youth problem solve, is needed. Teen and parent focus group comments reveal that there is great interest in more sex education that uses examples, pictures, and real-life scenarios, rather than simply a traditional, didactic lecture format. One program example is Be Proud! Be Responsible! a collection of three curricula that helps reduce HIV-risk–associated sexual behavior among low-income African American adolescents. The program involves group discussions, videos, games, brainstorming, experiential exercises, and skill-building activities (Jemmott, Jemmott, and Fong, 1998).

9.4.4 Substance Use

An encouraging finding is that use of cigarettes and alcohol is less common among District youth than among youth nationally. Among District youth in grades 9–12, 11 percent report currently smoking, compared to 20 percent of youth nationally. The prevalence of binge drinking was 12 percent (in the last 30 days) among District youth, compared to 26 percent nationally. However, rates of illicit drug use in the District were higher than nationally for heroin and illegal injection drugs. In 2007, 5 percent of District teens reported using heroin and just under 6 percent reported using injection drugs (versus 2 percent nationally for each).

Strategies. Programs such as Project ALERT, a school-based program that focuses on preventing adolescent nonusers from experimenting with drugs and preventing youths who are already experimenting from becoming more regular users could be tested. The program began in 1984 and is based on an approach that helps motivate young people to avoid using drugs and teaches them the skills they need to understand and resist pro-drug social influences. These influences may come from family, peers, other adults, or the media.

9.5 Target Investments and Interventions to Children Residing in Particular Areas Within the District

The variability of health and health care outcomes across children residing in different parts of the city suggests that targeting interventions based on location may be an efficient way to reach the children most in need. Combining information from the health index with information from the SES index suggests several areas of the District that may benefit most from interventions to improve the health environment. These include Columbia Heights, Mt. Pleasant, Pleasant Plains, Park View, Ivy City, Arboretum, Trinidad, Carver Langston, Near Southeast, Navy Yard, Historic Anacostia, Eastland Gardens, Kenilworth, Mayfair, Hillbrook, Mahan- ing Heights, Deanwood, Burrville, Grant Park, Lincoln Heights, Fairmont Heights, River Terrace, Benning, Greenway, Fort Dupont, Capitol View, Marshall Heights, Benning Heights, Woodland/Fort Stanton, Garfield Heights, Knox Hill, Sheridan, Barry Farm, Buena Vista, Douglass, Shipley Terrace, Congress Heights, Bellevue, and Washington Highlands.

Below, we provide additional information related to specific health issues for children by ward of residence:

- Fewer children in Wards 1, 6, 7, and 8 reported regularly exercising.
- Ward 8 had the highest rate of violence-related deaths in the District.
- Children in Wards 7 and 8 were less likely to have a medical home than children residing in other areas of the city.
- Children in Wards 1, 2, and 3 were least likely to have a preventive dental visit compared to District children residing in other areas of the city.
- The rate in the District of having problems with seeing specialists was substantially greater among children in Ward 7 (31 percent).
- Among youth ages 0–4, ACS rates (ED and IP) were highest in PUMA B, which contains most of Ward 4 and parts of Wards 1 and 5; and ACS-IP rates increased substantially in PUMA D, which contains Wards 7 and 8.
- Among youth ages 5–13 and 14–17, ACS rates were highest in PUMA B (most of Ward 4 and parts of Wards 1 and 5) and PUMA E, which contains parts of Wards 1, 2, and 6.
- Among those ages 18–24, ACS rates were highest and had recently increased in PUMA D (Wards 7 and 8).

Strategies. Interventions that are place-based or that focus on developing community-level wellness opportunity zones (Consumer Health Foundation, n.d.) could be implemented in these high-risk neighborhoods. These zones include incentives for innovative connections between public and private policies, programs, and practices affecting health and well-being. While there has been some discussion in the District about this initiative, more effort may be needed. For children, these approaches would acknowledge the multiple factors that affect child health as highlighted in our neighborhood analyses. In fact, creating “healthy child zones” could be an effective model to test in the District via small-area, demonstration projects. For example, a healthy child zone project could test multilevel interventions at the family, school, health provider, and neighborhood levels simultaneously by engaging these sectors to work collectively toward common child health objectives.

9.6 Increase Efforts to Continuously and More Comprehensively Monitor Children's Health

Ongoing monitoring of children's health and health care access is crucial to identifying emerging health issues, evaluating the effect of policy or local changes, and ensuring appropriate and timely response to identified needs.

Quantitative measures of health care capacity in the district for nonhospital-based care are severely limited. It is difficult to discern whether the supply of pediatricians in the District is "adequate" by some measure and for particular populations (residents in particular areas or children with certain types of insurance coverage) without better information on the amount of time providers spend treating District children (versus children in Maryland and Virginia) and doing nonclinical activities, and the type of insurance that providers accept.

In order to improve child health surveillance, the District should collect data on an annual or biennial basis. This may also provide a more accessible mechanism for gathering information on access to care and health status for children. For example, employing the CHAMPS (Child Health Assessment and Monitoring System) model, which is essentially a Behavior Risk Factor Surveillance System (BRFSS), for children may be optimal. CHAMPS has been employed in other states (e.g., North Carolina¹) and includes more data on child health status beyond the Youth Risk Behavior Survey. In addition, the survey can be designed to allow for more analysis by ward.

Similarly, there is a need for a mechanism allowing for more routine analysis of administrative data. The District Department of Health Care Finance is working on a model for consistently available, easily analyzable insurance claims data. Such data and opportunities for regular analysis would allow for more integration of continuous quality improvement mechanisms on a citywide level.

Further, our needs assessment focused only on children who had had an encounter with the health care system or were represented in school- or household-based surveys. More attention needs to be paid to collecting information on the needs of traditionally disconnected youth populations (e.g., homeless youth, emancipated minors, those aging out of child welfare).

Finally, our analysis of neighborhoods was limited because there are no readily available data on some characteristics that impact child health. For example, information on the resource availability at particular recreational facilities is needed as a quality measure. In addition, environmental quality indices, such as levels of radon, lead, and asbestos across the city, are lacking.

9.7 Improve Pediatric Health Through Investments Outside the Health Care Delivery System

While direct investment in the health care delivery system for children is one policy lever for improving the health of District children, investments in education, housing, neighborhood safety, the natural environment, and the like must be viewed as additional if not equally critical levers for improving children's health. As described earlier, creating wellness zones or healthy neighborhoods requires multilevel and multisystem efforts. For example, previous research has

¹ More information on the North Carolina program can be found at <http://www.schs.state.nc.us/SCHS/champ>

shown that factors such as income and family structure in early life not only frame the social outcomes of childhood but also affect health during adulthood. Although the rate of children in poverty has declined in recent years (from 27 to 23 percent between 2003 and 2007), the percentage of children who live in poverty in the District is still higher than it is nationally (23 versus 18 percent). Further, safety and violence are particularly important issues facing District youth. The rate of date violence in the District increased from 11 percent to 17 percent from 2005 to 2007 and is significantly higher than the U.S. rate of 10 percent. Further, 14 percent of youth in the District reported feeling unsafe in school compared to 6 percent nationally. Finally, rates of child abuse and neglect are twice the national average; consequently, there are far more children in the foster care system in the District than in the nation.

Demographic, Geographic, and Health Plan Information

A.1 Sociodemographic Characteristics

Roughly 600,000 people, of whom about 150,000 are children (ages 0–17), reside in the 61.4-square-mile area that comprises the District of Columbia. The sociodemographic characteristics of District residents vary widely. Table A.1 shows the sociodemographic characteristics of each of the District's eight wards (well-known political catchment areas) as of 2000.

Table A.1
Sociodemographic Characteristics of D.C. Residents, by Ward (2000)

	Ward							
	1	2	3	4	5	6	7	8
Population (in thousands)	80.0	82.8	79.6	71.4	66.5	65.5	64.7	61.5
Ages 0–17 (%)	17.0	10.6	12.9	20.6	21.8	19.1	27.9	36.7
Age 65 years and older (%)	7.7	9.1	13.8	17.1	17.8	11.4	14.0	6.4
African American (%)	43.2	30.4	6.3	77.9	88.2	68.7	96.9	91.8
Caucasian (%)	35.2	56.2	83.6	10.3	7.9	27.2	1.4	5.8
Hispanic (%)	23.4	8.6	6.5	12.8	2.5	2.4	0.9	1.5
Family income <FPL (%)	20.0	10.9	2.7	7.9	14.3	19.2	21.6	33.2
Family income <1.85 x FPL (%)	37.8	21.5	5.5	18.0	28.1	31.8	36.5	51.7
Median family income (in \$1,000s)	58	132	191	81	55	68	45	35

SOURCE: Census 2000.

NOTE: FPL = Federal poverty line.

As shown, Wards 1, 2, and 3 are the largest wards, each with roughly 80,000 residents. Residents of Ward 3 are the best-off economically, with the fewest families in poverty and the highest median family income. Conversely, Wards 7 and 8 have the greatest percentages of residents living in poverty (22 and 33 percent, respectively) and the lowest median family incomes. In Wards 1 and 6, approximately 20 percent of residents live in poverty, although median family incomes are substantially higher than in Wards 7 and 8, reflecting more income diversity. Wards 4, 5, 6, 7, and 8 are predominantly African-American, and Wards 5, 7, and 8 have the highest percentages of African-Americans. Ward 1 has the greatest proportion of Hispanics (nearly a quarter of the population). Approximately one-third of residents of Wards 7 and 8 are children, while the elderly (65 and older) comprise approximately 17 percent of the population in Wards 4 and 5.

The sociodemographic characteristics of District children are described in detail in Chapter 4.

A.2 PUMAs, Wards, and Clusters

The District can be divided not only into 8 wards (political catchment areas), but also into 5 larger geographic areas, known as Public Use Microdata Areas (PUMAs), and smaller neighborhood clusters. District PUMAs and their relation to wards are shown in Figure A.1 and described as follows:

- PUMA A covers most of Northwest D.C. and encompasses Ward 3 and part of Wards 2 and 4.
- PUMA B contains most of Ward 4 and parts of Wards 1 and 5.
- PUMA C contains most of Wards 5 and 6.
- PUMA D contains Wards 7 and 8.
- PUMA E contains Wards 1, 2, and 6.

Figure A.1
D.C. PUMAs and Wards

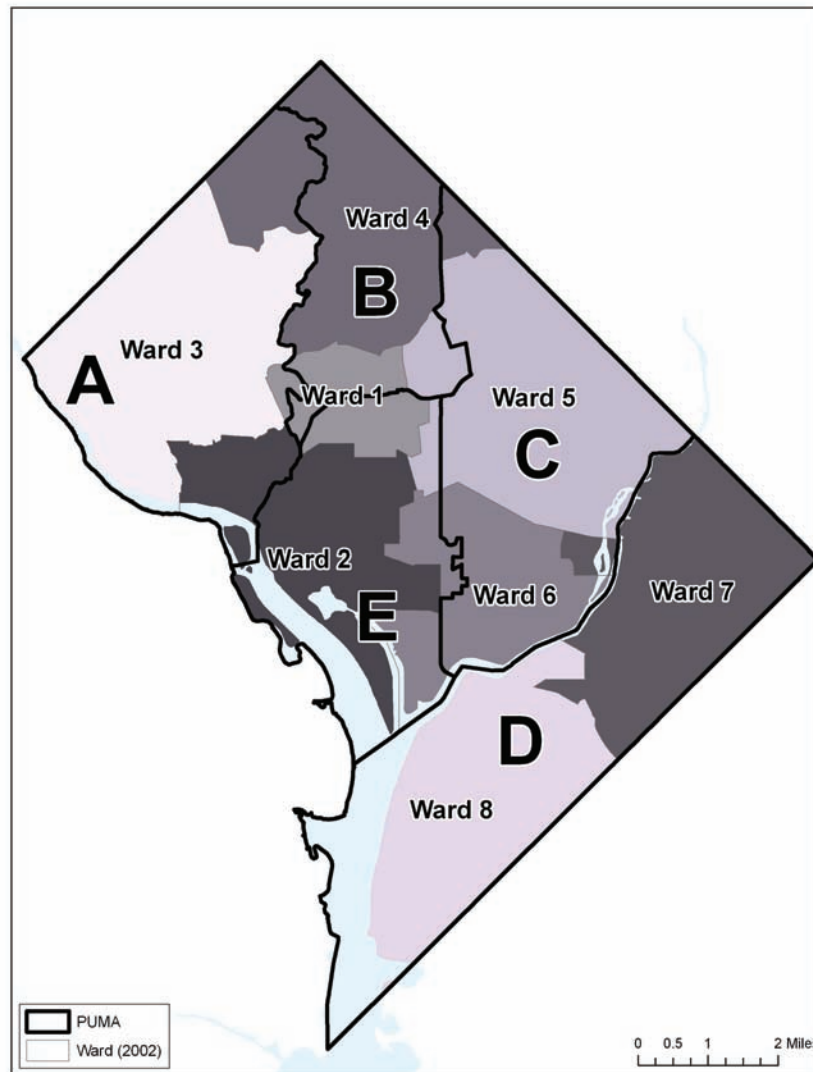


Table A.2 summarizes the child population by age for each PUMA. With nearly 56,000 children in total, PUMA D (including Wards 7 and 8) has the greatest number of children. Each of the other PUMAs has between 20,000 and 30,000 children. Table A.3 shows the names of neighborhood clusters.

Table A.2
Population of District Children, by PUMA (2007)

Age	PUMA				
	A	B	C	D	E
0–2 years	3,943	4,036	4,514	7,495	3,188
3–6 years	4,667	4,404	4,159	9,964	2,022
7–12 years	4,741	5,590	5,767	15,121	3,615
13–17 years	3,079	4,797	5,655	14,405	3,595
18–21 years	7,971	5,710	7,054	8,793	8,599
Total (0–18)	24,401	24,537	27,149	55,778	21,019

Table A.3
Neighborhood Clusters and Names

Cluster Number	Neighborhood Name
1	Kalorama Heights, Adams Morgan, Lanier Heights
2	Columbia Heights, Mt. Pleasant, Pleasant Plains, Park View
3	Howard University, Le Droit Park, Cardozo/Shaw
4	Georgetown, Burleith/Hillandale
5	West End, Foggy Bottom, GWU
6	Dupont Circle, Connecticut Avenue/K Street, Foggy Bottom
7	Shaw, Logan Circle
8	Downtown, Chinatown, Penn Quarter, Mount Vernon Square, North Capitol Street
9	Southwest Employment Area, Southwest/Waterfront, Fort McNair, Buzzard Point
10	Hawthorne, Barnaby Woods, Chevy Chase
11	Friendship Heights, American University Park, Tenleytown
12	North Cleveland Park, Forest Hills, Van Ness
13	Spring Valley, Palisades, Wesley Heights, Foxhall Crescent, Foxhall Village, Georgetown Reservoir
14	Cathedral Heights, McLean Gardens, Glover Park
15	Cleveland Park, Woodley Park, Massachusetts Avenue Heights, Woodland-Normanstone Terrace
16	Colonial Village, Shepherd Park, North Portal Estates
17	Takoma, Brightwood, Manor Park
18	Brightwood Park, Crestwood, Petworth
19	Lamont Riggs, Queens Chapel, Fort Totten, Pleasant Hill
20	North Michigan Park, Michigan Park, University Heights
21	Edgewood, Bloomingdale, Truxton Circle, Eckington
22	Brookland, Brentwood, Langdon
23	Ivy City, Arboretum, Trinidad, Carver Langston
24	Woodridge, Fort Lincoln, Gateway
25	Union Station, Stanton Park, Kingman Park
26	Capitol Hill, Lincoln Park
27	Near Southeast, Navy Yard
28	Historic Anacostia
29	Eastland Gardens, Kenilworth
30	Mayfair, Hillbrook, Mahanog Heights

Table A.3 (continued)

Cluster Number	Neighborhood Name
31	Deanwood, Burrville, Grant Park, Lincoln Heights, Fairmont Heights
32	River Terrace, Benning, Greenway, Dupont Park
33	Capitol View, Marshall Heights, Benning Heights
34	Twining, Fairlawn, Randle Highlands, Penn Branch, Fort Davis Park, Fort Dupont
35	Fairfax Village, Naylor Gardens, Hillcrest, Summit Park
36	Woodland/Fort Stanton, Garfield Heights, Knox Hill
37	Sheridan, Barry Farm, Buena Vista
38	Douglas, Shipley Terrace
39	Congress Heights, Bellevue, Washington Highlands

SOURCE: <http://www.neighborhoodinfodc.org/nclusters/nclusters.html>

A.3 Health Insurance Plans for District Children

Medicaid Managed Care

Medicaid encompasses the State Children Health Insurance Program (SCHIP). In 2007, D.C. Medicaid expanded its coverage to include children up to age 18 up to 300% of poverty (\$52,800 in 2009). It covers children ages 19–20 up to 200% of poverty (\$35,200 in 2009).

D.C. Healthcare Alliance

This plan is available for anyone who lives in the District, does not have health care (including Medicare and Medicaid) and has a qualifying annual pretax income (higher than the Medicaid cutoff). The D.C. Alliance provides health care access to some children who lack legal documentation. In 2006 there were 3,320 youth (under the age of 21) enrolled in Alliance for a full 12 months.

Fee-For-Service Medicaid

FFS Medicaid is available to all Medicaid-eligible families; it is mostly comprised of families eligible for SSI (Supplemental Security Income), although any families that opt out of Medicaid managed care can enroll in FFS.

Children with Special Health Care Needs (HSCSN)

In order to be enrolled in HSCSN, a child must be eligible for Supplemental Security Income (SSI) and be under the age of 24. Enrollment is voluntary; SSI children (roughly 6,000) have the option to remain in FFS Medicaid, although roughly 80 percent opt for HSCSN coverage.

Analyses of the National Survey of Children's Health

The goal of the NSCH is to select representative samples of children under age 18 in each state. The NSCH has several advantages over other data sources that are worth noting. First, the survey is large and is designed to provide state-level estimates of a broad range of child-specific indicators, including physical, emotional, and behavioral health; health care use; family influences; and neighborhood influences. Second, the survey is nationally representative, allowing us to compare the District to the nation. Third, because it is a household survey, we can learn about children who use services and those who do not, whether or not they have health insurance. This stands in contrast to claims data, which give us insights about users of services with insurance only. Finally, the NSCH was fielded in both 2003 and 2007, allowing us to examine trends in D.C. over time. We cannot study changes in specific households over time, because the survey does not follow a panel of households. Nonetheless, we can speak about citywide trends.

In addition to looking at city-level indicators, over time and compared to the nation, we conducted analyses using a restricted NSCH file at the Research Data Center of the National Center for Health Statistics. The restricted NSCH file permitted us to examine differences within the city by ward.

Analysis. The NSCH data were used to conduct descriptive analysis and significance tests. We calculated weighted percentages and standard errors for each variable. Some estimates were generated at the ward level, which is the smallest area at which estimates with a reasonable margin of error can be generated for these surveys. If the ward of residence for every individual in the sample were known, these calculations would be straightforward. However, the restricted NSCH data provides only the zip code of residence for each person. The Census data can be used to estimate the breakdown of zip code populations across wards. Using these two pieces of information, we generated our point estimates in two steps. First, we calculated all of the statistics mentioned above at the zip code-level. We then combined zip code-level estimates to obtain ward-level estimates. For example, if ward Y is made up of zip codes 1, 2, and 3 with 50 percent of its population in zip code 1, 30 percent in zip code 2, and 20 percent in zip code 3, and the percentage of children with asthma are p_1 , p_2 and p_3 for zip codes 1, 2, and 3, respectively, then the percentage estimate for ward Y is:

$$\begin{aligned} \text{Percentage of} \\ \text{children with asthma in ward Y} \end{aligned} = p_Y = 0.50 \times p_1 + 0.30 \times p_2 + 0.20 \times p_3.$$

$$\text{Variance } (p_Y) = 0.50^2 \times \text{Var } (p_1) + 0.30^2 \times \text{Var } (p_2) + 0.20^2 \times \text{Var } (p_3).$$

The sample size calculation is similar but uses a different set of weights. If 25 percent of the population of zip code 1, 40 percent of the population of zip code 2, and 75 percent of the population of zip code 3 live in ward Y, then the counts for ward Y can be calculated as Number of children with asthma in ward Y = $N_Y = 0.25 \times N_1 + 0.40 \times N_2 + 0.75 \times N_3$, where N_1 , N_2 , and N_3 are the number of children with asthma in zip codes 1, 2, and 3, respectively. With these estimated ward-level counts, we created a cross-classified table of counts with eight wards and two levels of asthma.

Use of Health Care Services Through Children’s National Medical Center

In this appendix, we profile the services provided through Children’s National in the ED or in the local Children’s Health Centers. The analysis is based on Children’s National claims data and include children ages 0–21 who used outpatient hospital or outpatient care from Children’s National during the last half of 2007 and the first half of 2008. The data include 43,281 patients who obtained Children’s National hospital services (other than inpatient services) or services from Children’s National Goldberg Center clinics.¹

C.1 Characteristics of Children’s National Patients

The first set of tables profile the characteristics of patients who use Children’s National non-inpatient hospital services and Children’s National outpatient care (hereafter referred to as “services”). Table C.1 shows the payer type for office visits and ED visits among patients using Children’s National services. Nearly two-thirds of visits are paid for by D.C. Medicaid or Alliance and approximately 15 percent are self-pay.

Table C.1
Payer Distribution for Office Visits and Emergency Department Visits Among Children’s National Patients

Payer Type	Percent of Visits
D.C. Medicaid/Alliance managed care	48.1
Private	17.2
D.C. Medicaid—fee-for-service	17.4
Self-pay (uninsured)	15.5
Out-of-state Medicaid	1.0
Other	0.6

Table C.2 profiles the age distribution of patients served. Across all patients, 56 percent of patients are between the ages of 2 and 12 years and 75 percent are between 2 and 17 years.

¹ The Goldberg Center includes the Adolescent Health Center (AHC) at Children’s National, the Children’s Health Center (CHC) at Children’s National, Martin Luther King, Good Hope Road, Adams Morgan, Shaw, and THEARC. Some regional outpatient centers specialize in particular types of disorders. The eight regional outpatient centers are Annapolis/Anne Arundel, Falls Church (cancer and blood disorders), Frederick, Laurel Lakes, Rockville/Shady Grove (Montgomery County), Rockville (neuropsychology), Fairfax, and Upper Marlboro.

Children's National offers health care services at a number of locations. Approximately half of patients served in the ED are between 2 and 12. Fifty-five percent of Children's National office patients fall into that age range. Among the Goldberg Center sites, the CHC serves primarily children under 12 and the AHC serves primarily older children. Half of patients who use services at THEARC are between the ages of 7 and 17.

Tables C.3–C.5 describe where Children's National patients reside. Across all patients (Table C.3), regardless of the type of services used or site of care, nearly 30 percent are from zip codes 20019 and 20020. Fully half of patients are from zip codes 20019, 20020, 20011, and 20010; and three-quarters of patients served are from those zip codes along with 20032 and 20002.

Tables C.4 and C.5 show the patient distribution by location of care. Zip codes from which more than 10 percent of patients are drawn are highlighted with bold text. Table C.4 focuses on Goldberg Center sites and Table C.5 on Children's National sites. As expected, each Goldberg site serves a slightly different population. The CHC and AHC draw heavily from residents in zips 20019, 20011, 20002; the Adams Morgan site has patients primarily from zips 20009, 20010, 20011; Good Hope Road derives half of its patients from 20020; THEARC has patients largely from zip codes 20020 and 20010; half of MLK patients are drawn from 20032; and finally, Shaw draws 21 percent of its patients from 20001.

The distribution of ED patients and Children's National office patients (Table C.5) closely mirrors that of all patients.

Table C.2
Age of Children's National Patients by Site of Service, 2007–2008

	Age					
	<1	1	2–6	7–12	13–17	18–21
Children's National						
ED	17.6	11.4	28.2	21.5	18.6	2.6
Office	10.9	7.5	25.1	30.0	23.7	2.8
Goldberg Centers						
Children's Health Center (CHC)	24.1	13.9	37.0	23.6	0.8	0.7
Adams Morgan	14.8	9.3	32.0	24.7	16.4	2.8
Adolescent Health Center (AHC)	0.0	0.0	0.0	13.5	66.3	20.2
Good Hope Road	19.5	10.6	27.0	23.8	16.7	2.5
THEARC	12.7	8.0	21.6	25.9	25.9	5.8
Martin Luther King, Jr. Avenue	18.9	12.5	30.0	22.8	14.3	1.5
Shaw	15.3	7.9	28.3	22.8	22.3	3.5
All Sites	10.3	8.0	28.7	27.1	21.7	4.1

Table C.3
Zip Code of Residence Among Children's National Patients, 2007–2008

Zip Code	N	Percent
20019	6,477	15.0
20020	6,265	14.5
20011	5,647	13.0
20010	4,576	10.6
20032	4,335	10.0
20002	4,327	10.0
20001	2,577	6.0
20009	2,183	5.0
20018	1,623	3.8
20017	1,283	3.0
20003	861	2.0
20012	709	1.6
20024	640	1.5
20016	445	1.0
20008	397	0.9
20015	318	0.7
20005	264	0.6
20007	242	0.6
20037	47	0.1
20036	26	0.1
20004	24	0.1
20006	15	0.0
All	43,281	100.0

NOTE: Outpatient and outpatient hospital patients only.

Table C.4
Zip Code of Residence of Patients Served at Each Goldberg Center Site, 2007–2008 (%)

Goldberg Centers	CHC	Adams Morgan	AHC	Good Hope Road	THEARC	MLK	Shaw
20001	7	6	7	2	2	1	21
20002	14	4	13	4	5	3	10
20003	2	0	2	1	1	1	2
20005	1	1	0	0	0	0	1
20007	0	0	0	0	0	0	0
20008	0	0	0	0	0	0	1
20009	4	26	4	0	1	0	12
20010	9	21	18	3	22	4	9
20011	15	30	13	1	3	1	17
20012	2	2	1	0	0	0	1
20015	0	0	0	0	0	0	0
20016	0	1	0	0	0	0	0
20017	4	2	5	1	1	1	2
20018	6	3	5	0	2	1	2
20019	16	3	15	16	17	8	10
20020	10	1	9	53	27	25	5
20024	2	0	1	1	2	1	2
20032	7	1	6	17	18	55	4
Total	100	100	100	100	100	100	100

NOTES: Zip codes 20004, 20006, 20036, and 20037 excluded. Totals do not sum to 100 percent because of rounding.

Table C.5
Zip Code of Residence Among Children's National Emergency
Department and Children's National Office Patients, 2007–2008 (%)

Zip Code	ED	Office
20001	6	5
20002	12	9
20003	2	2
20005	1	1
20007	0	1
20008	1	2
20009	4	4
20010	10	15
20011	14	13
20012	2	2
20015	0	1
20016	0	2
20017	3	3
20018	4	4
20019	16	13
20020	14	12
20024	2	2
20032	9	8
Total	100	100

NOTE: Totals do not sum to 100 percent because of rounding

C.2 Types of Health Care Services Received by Children's National Patients

Table C.6 summarizes the types of care from Children's National that patients are observed to receive, by payer type. Uninsured patients and FFS Medicaid patients who used Children's National services were most likely to use office services alone (65 percent and 62 percent, respectively). Medicaid managed care enrollees who used Children's National services were most likely to use the ED alone (46 percent), as were out-of-state Medicaid patients (48 percent). Compared to other payer groups, privately insured patients were most likely to have office-based care in combination with ED use (7.6 percent).

Table C.6
Office-Based Visits and Emergency Department Visits Among Children's National Patients, by Payer
Status, 2007–2008 (%)

	Office Visit, No ED Visit	ED Visit, No Office Visit	Office Visit and ED Visit	No Office or ED Visit	Total
Private	42.0	35.9	14.5	7.6	100
D.C. Medicaid (FFS)	61.7	12.2	23.3	2.9	100
D.C. Medicaid (MCO)	27.1	45.7	23.7	3.5	100
Out-of-State Medicaid	30.8	48.0	19.1	2.1	100
Uninsured	65.4	14.9	18.8	0.9	100

Table C.7 profiles use of office-based care and ED care by age. Across all ages, 43 percent of patients received only nonhospital care from Children's National, whereas nearly one-third of patients received only ED. (A small fraction were observed to have neither an office-based visit nor an ED visit but may have received other miscellaneous services, such as dental care or radiological or lab services only.)

Table C.7
Office-Based Visits and Emergency Department Visits Among
Children's National Patients, by Age, 2007–2008 (%)

Age	Office Visit, No ED Visit	ED Visit, No Office Visit	Office Visit and ED Visit	No Office or ED Visit
0–1	27.5	42.1	27.5	2.9
2–6	42.8	33.4	20.6	3.2
7–12	49.2	28.0	19.2	3.7
13–17	46.2	31.1	18.9	3.8
18–21	59.0	22.7	14.5	3.8
All	43.1	32.6	20.8	3.4

The very youngest Children's National patients (those under age 1) were most likely to obtain ED but not office-based care from Children's National (42 percent had an ED visit only).

The type of care that Children's National patients obtain also varied according to where patients reside. Table C.8 shows the percentage of patients from each zip code who used different types of care. Patients from zip codes 20007, 20008, 20015, 20016, and 20032 were most likely to use Children's National for office visits alone. Because we do not observe use of services from other hospitals, we do not know if these patients were receiving ED care from another hospital or if they received no ED care at all. Several zip codes had more than one-third of patients who used the ED only: 20002, 20003, 20005, 20011, 20012, 20017, 20018, 20019, and 20024.

Table C.8
Children's National Patients from Each Zip Code Obtaining Office
and Emergency Department Services, 2007–2008 (%)

	Office Visit, No ED Visit	ED Visit, No Office Visit	Office Visit and ED Visit	No Office or ED Visit
20019	38.2	38.5	20.8	2.5
20020	47.0	29.9	21.0	2.2
20011	39.5	35.0	21.9	3.5
20010	46.7	27.0	22.5	3.9
20032	50.2	27.9	19.8	2.1
20002	37.5	36.4	22.9	3.1
20001	41.8	33.1	22.2	2.9
20009	48.4	27.9	19.6	4.1
20018	39.0	35.4	23.0	2.6
20017	37.6	35.9	23.1	3.5
20003	41.2	39.0	15.9	3.8
20012	38.8	37.1	18.6	5.5
20024	39.1	37.2	20.8	3.0
20016	55.7	19.1	6.7	18.4
20008	57.2	21.9	9.8	11.1
20015	56.3	18.6	10.1	15.1
20005	39.4	42.4	12.9	5.3
20007	58.3	15.7	9.9	16.1
All	43.1	32.6	20.8	3.4

NOTE: Zip codes 20004, 20006, 20036, and 20037 were removed from the analysis because they each had fewer than 50 patients.

Table C.9 examines the percentage of ED patients who were seen in a Children's National outpatient setting within one to six months after the ED visit. Approximately 14 percent of ED patients were seen in a Children's National office setting within one month, 20 percent were seen within three months, and 32 percent were seen within six months. In addition, we examined the percentage of patients seen in an office setting among patients who presented to the ED with various diagnoses. We included only diagnoses for which there were 50 or more patients who had a related ED visit. The highest rates of Children's National office follow-up were for pneumonia (29 percent of patients seen in the ED for pneumonia received Children's National office care within one month), bronchitis (22 percent), and asthma (22 percent).

Table C.9
Percentage of Emergency Department Visits with Subsequent Children's National Office-Based Care

Time Frame	Percent
Within 1 month after ED Visit	14.1
Within 2 months after ED Visit	20.2
Within 6 months after ED Visit	31.9

Diagnosis (3 digit ICD9)	Percent (within 1 month)
[486] Pneumonia, organism unspecified	28.6
[V71] Observation and evaluation for suspected conditions	22.6
[466] Acute bronchitis and bronchiolitis	22.1
[493] Asthma	22.0
[780] General symptoms	21.8
[786] Symptoms involving respiratory system and other chest symptoms	21.1
[282] Hereditary hemolytic anemias	21.0
[959] Injury, other and unspecified	19.8
[787] Symptoms involving digestive system	18.9
[599] Other disorders of urethra and urinary tract	18.0
[682] Other cellulitis and abscess	15.0

Review of Literature: Physical and Social Environment and Health

In this appendix, we first review literature that has explored linkages between physical and social neighborhood characteristics and health outcomes, taking particular note of studies that have looked specifically at health outcomes among children (Section D.1). We then summarize studies that have addressed the relationship between the local health care market infrastructure and access to health care (Section D.2).

At the outset, we note two important points. First, estimating the relationship between neighborhood environment and health requires adequate controls for individual and family characteristics. The substantial variability in how well studies control for these characteristics accounts for some of the differences in magnitude and importance of various neighborhood effects observed across studies (Ginther, Haveman, and Wolfe, 2000; Diez-Roux, 2004).

Second, estimating the *causal* effects of neighborhood characteristics on health is methodologically challenging and beyond the scope of many studies of environment and health (Oakes, 2004; Diez-Roux, 2004; Subramanian, 2004). A key issue in determining causality is that individuals may select the neighborhoods in which they live, and unmeasured characteristics of individuals affecting their neighborhood selection may be correlated with health outcomes. Other issues include the confounding of individual-level and neighborhood-level variation in factors, as well as defining the appropriate area over which to measure neighborhood effects. Studies vary in the degree to which associations versus causal relationships are identified.

In the following sections, we provide a broad overview of key studies but do not attempt a comprehensive methodological critique of each. Nor do we attempt to place any of the findings on the spectrum between association and definitive causation.

D.1 Social and Physical Neighborhood Characteristics and Health

Socioeconomic Status

A substantial body of literature has found that neighborhood-level social conditions are associated with individual health, even after controlling for such individual-level factors as income and education. Most of the literature has found strong evidence that individuals who live in neighborhoods of lower socioeconomic status (such as those that have a higher concentration of residents living in poverty or who have not completed high school) are at greater risk for poor health outcomes. Reported effects of neighborhood socioeconomic status (SES) on health outcomes include mortality, low birthweight, morbidity, health behaviors such as poor dietary habits, injuries, child maltreatment, activity limitations, and lack of physical exercise (see, for

example, Lee and Cubbin, 2002; Yen and Syme, 1999; Diez-Roux, 2001; Ellen, Mijanovich, and Dillman, 2001; Pickett and Pearl, 2001; Malmstrom, Sundquist, and Johansson, 1999; Leventhal and Brooks-Gunn, 2001; Coulton et al., 1995; Silver, Mulvey, and Swanson, 2002; Jones and Duncan, 1995; Haan, Kaplan, and Camacho, 1987; Waitzman and Smith, 1998; Yen and Kaplan, 1999).

Social Capital and Related Measures

In addition, studies have explored the relationship between measures of “social capital” (generally defined as the quality and quantity of social resources in a community) and related concepts such as connectedness and “collective efficacy” (the norms and networks that enable collective action) (Kawachi et al., 1999; Coleman, 1988; Veenstra, 2000). Specific neighborhood attributes related to social capital or social support include, for example, the availability of and participation in spiritual or religious centers or organizations, which may foster social support, encourage volunteerism, or increase civic participation (Putnam, 2000). Studies have documented that strong social networks are associated with reduced mortality and improved cardiovascular health (Kawachi et al., 1999) and that collective efficacy is associated with premature mortality, cardiovascular disease mortality, and—among adolescents—the probability of being at risk for overweight and high body mass index (BMI) (Cohen, Farley, and Mason, 2003; Lochner et al., 2003; Cohen et al., 2006). However, some studies have shown that less attachment to the community among minority populations in poor communities may actually have salutary health effects (Caughy, O’Campo, and Muntaner, 2003).

Street Connectivity

Urban sprawl—a measure of the built environment that encompasses residential density, land use mix, centralization, and street connectivity (the degree to which destinations can be reached in a direct pathway)—has been linked to a variety of health outcomes. For example, recent studies have found that urban sprawl is associated with obesity (Ewing et al., 2003) and poor physical health outcomes such as arthritis, digestive problems, and migraine headaches (Sturm and Cohen, 2004). Sturm and Cohen further found that lower street connectivity is associated with higher rates of coronary heart disease. Urban sprawl and street connectivity may affect the accessibility of fresh foods (such as from a supermarket). A split between residential and shopping areas is a common characteristic of sprawling areas (Ewing, Pendall, and Chen, 2003) and street connectivity affects individuals’ ability to move easily through areas. Further, urban sprawl and street connectivity are hypothesized to affect health outcomes through their effect on the opportunity for routine, daily physical activity. In concert with this hypothesis, earlier studies have shown that individuals in neighborhoods with a high degree of street connectivity walk and bicycle more (Hess et al., 1999; Moudon et al., 1997). Frank et al., 2007, confirm that many of the same components of walkability that explain active transportation for adults also apply to children and adolescents. In particular, their study found that street connectivity and other aspects of urban form are related to walking distances among youth ages 5–20. Further, street connectivity may be important to the formation of social networks (Wheeler, 1998; Putnam, 1995), which in turn are associated with health outcomes such as cardiovascular disease, depression, and mortality (Seeman and Syme, 1987; Seeman et al., 1993; Aneshensel and Stone, 1982; Flaherty et al., 1983; Bland et al., 1991).

Exercise Environment

Various studies have found an association between measures of the availability of places to exercise and physical activity among youth. For example, Scott, Evenson, Cohen, et al., 2007, found that the number of recreational facilities within one-half mile of adolescent girls' homes (such as basketball courts, golf courses, martial arts studios, playing fields, tracks, skating rinks, swimming pools, tennis courts, and dance/gymnastic clubs) is associated with their perceived accessibility of recreational opportunities, and these perceptions are in turn associated with increased physical activity. In addition, they found that school grounds and facilities represent nearly half of the potential places where children might engage in physical activity and their accessibility is related to body mass index. Another study found that adolescent girls who live within one-half mile of a public park were more physically active than other girls (Cohen et al., 2006). Roemmich et al., 2006, found that neighborhoods with a greater proportion of park area are associated with greater physical activity in young children (ages 4–7). Specific park features were also important to exercise patterns. Specifically, people were more likely to exercise at parks that had areas for moderate exercise, such as tracks, walking paths, and trails (Cohen et al., 2007). Finally, the presence of bike lanes and sidewalks has also been shown to influence routine walking and cycling (Sallis and Owen, 1990; Giles-Corti and Donovan, 2003; De Bourdeau Huij, Sallis, and Saelens, 2003).

Neighborhood Safety

Neighborhood safety may also be associated with exercise and obesity among children, as well as with other health outcomes. Lumeng et al., 2006, found that parents' perception of the neighborhood as less safe was independently associated with an increased risk of overweight among their children. Gordon-Larsen, McMurray, and Popkin, 2000, found an inverse relationship between crime and physical activity among children. Further, looking specifically at adolescents, Aneshensel and Sucoff, 1996, found that perceived neighborhood danger is associated with increased symptoms of depression, anxiety, oppositional defiant disorder, and conduct disorder.

Housing

An evolving literature shows a strong relationship between housing conditions and health. Housing conditions are particularly important to the health of young children, who spend the majority of their time in the household environment (Sharfstein and Sandel, 1998). Krieger and Higgins, 2002, reviewed the extensive literature relating poor housing conditions with morbidity from infectious diseases, chronic illnesses, injuries, and mental disorders. Important aspects of housing related to health include overcrowding, excessive noise, and pest infestations, with morbidity from infectious diseases, chronic illnesses, injuries, and mental disorders. One study suggests that recurrent periods of housing deprivation during the first three decades of life are associated with disability or severe ill health (Marsh et al., 1999).

Neighborhood Deterioration

Relatedly, Krause, 1996, reported a relationship between neighborhood deterioration (as measured by the prevalence of vacant or boarded-up housing and the level of care of residential yards, for example) and self-reported health in a sample of elderly Medicare beneficiaries, even after controlling for socioeconomic position, and Krause, 1998, found greater decline in self-rated health among those living in deteriorated neighborhoods. Cohen, Mason et al., 2003,

found that the prevalence of boarded-up housing in a community is associated with gonorrhea rates, all-cause premature mortality, and premature mortality due to malignant neoplasms, diabetes, and homicide. Finally, in a study of low-income Baltimore residents, Latkin and Curry, 2003, found that perceptions of stressful neighborhood conditions, including vacant housing and vandalism, are associated with depression.

Food Environment

Other studies have explored the link between access to low cost, healthy food and health outcomes. Morland et al., 2002, found that blacks are more likely to meet dietary guidelines when they live in areas with supermarkets. Sturm, 2008, found that Hispanic youth are more likely to attend schools in areas where snacks, sodas, and fast food are more easily accessible, and Austin et al., 2005, found that in Chicago fast-food restaurants were statistically significantly clustered in areas within a short walking distance from schools, exposing children to poor-quality food environments in their school neighborhoods. Recent evidence supports the theory that students' proximity to fast-food restaurants is associated with overweight among children (Davis and Carpenter, 2009; Currie et al., 2009), although not all studies found the same result (Burdette and Whitaker, 2004). Davis and Carpenter found that students with fast-food restaurants within one-half mile of their schools were more likely to be overweight or obese than were youths whose schools were not near fast-food restaurants, after controlling for student- and school-level characteristics. Currie et al. found that among ninth-grade children, a fast-food restaurant within a tenth of a mile of a school is associated with an increase in obesity rates of approximately 5 percent.

Retail Establishments Selling Alcohol

The density of other types of retail establishments has also been linked to children's health. In particular, the density of establishments selling alcohol for consumption off the premises has been linked to the risk of injuries among children from accidents, assaults, and child abuse (Freisthler et al., 2008). In addition, the density of off-premise alcohol retail establishments has been shown to be associated with rates of violence—assault in particular (Gruenewald and Remer, 2006).

Environmental Toxins

Environmental toxins have obvious health implications. Higher levels of ambient air pollution are associated with reported health problems (Gent et al., 2003; Gouveia, 2004; Pope et al., 2002), low birthweight, and increased risk of myocardial infarction (Peters, 2004), and asthma exacerbations (Gent et al., 2003). Pollution might also indirectly affect population health if people exercise less when pollution levels are high. The U.S. Environmental Protection Agency (EPA) recommends that people reduce outdoor activity when ozone levels exceed 0.10 parts per million and suggests a lower threshold for susceptible individuals, such as those with respiratory problems. Further, proximity to high traffic density has been shown to reduce lung function and increase asthma and bronchitis symptoms, especially among children (Brauer et al., 2002; Brunekreef et al., 1997).

Natural Environment

Along with social capital, "protective" characteristics of the local environment include the extent of tree cover and other natural features, which have been associated with positive mental

and emotional health effects among individuals, including fewer behavioral problems among children (Ulrich, 1979; Ulrich, 1984; Kaplan, Robbins, and Martin, 1983; Ulrich and Addoms, 1981; Kuo and Sullivan, 2001; Taylor, Kuo, and Sullivan, 2001).

D.2 Health Care Service Delivery System and Access to Health Care

In this section, we review studies that explore how variability in the geographic availability and accessibility of health care services influence health outcomes.

Many studies have found a positive relationship between the supply of primary care physicians in an area and use of health care among children. Gresenz, Rogowski, and Escarce, 2006, focused on uninsured children and showed that in urban areas, the supply of primary care physicians as well as the level of safety-net funding, are positively associated with medical expenditures. Mayer et al., 2004, showed that, among children with a special health care need, a greater supply of general pediatricians relative to the pediatric population is associated with a significantly lower likelihood of having an unmet need for routine care.

Other studies have shown that a greater supply of primary care is related to lower rates of ambulatory care–sensitive hospitalizations (that is, hospitalizations that are potentially preventable by appropriate ambulatory care). For example, Bindman et al., 1995, studied access to care in 41 California zip code clusters and found evidence that preventable hospitalization rates are higher in communities with poorer access to care. Laditka, Mastanduno, and Laditka, 2001, reported that a higher physician-to-population ratio at the zip code level is associated with lower rates of avoidable hospitalization, controlling for area socioeconomic status and burden of illness. In a study in three communities, Perrin et al., 1996, showed that rates of avoidable hospitalizations for diabetes and pneumonia among children were lower in areas where family physician-to-population ratios were higher, and Parchman and Culler, 1994, found that geographic areas with more family and general practitioners have lower hospitalization rates for diabetes mellitus, hypertension, and pneumonia. Relatedly, Ryan et al., 2001, found that adolescents in rural areas with the same regular source of care for preventive and illness care were less likely to seek care in emergency rooms.

Primary care physician supply has also been directly linked to health outcomes (as opposed to use of health care). Shi et al., 2004, found that low birthweight and infant mortality at the state level were significantly associated with the supply of primary care physicians (in the same year as well as after one-, three-, and five-year lag periods) after controlling for various socioeconomic characteristics and income inequality. Further, the study found that the supply of primary care physicians had an even larger positive impact on low birthweight and infant mortality in areas with high social inequality than in areas with lower social inequality. In a review of literature, Starfield, Shi, and Macinko, 2005, likewise found consistent evidence of a relationship between the supply of primary care and a range of health outcomes—including all-cause mortality, heart disease mortality, stroke mortality, infant mortality, low birthweight, life expectancy, and self-rated health—regardless of the level of analysis (state, county, or local area).

In addition to the overall supply of physicians in an area, the geographic proximity of health care providers is associated with use of health care. Fortney et al., 2005, 1999, showed that travel distance affects the probability of using mental health and alcoholic treatment services. Gresenz, Rogowski, and Escarce, 2006, found that distance to the nearest safety-

net provider is a key determinant of access to care among uninsured children in rural areas. Although such distance was not associated with access to care among urban uninsured children, the authors note that distance is a poorer measure of the travel time and costs associated with care in urban areas than in rural areas.

Guagliardo, 2004, suggests that for urban areas the “spatial accessibility” of providers is insufficiently measured by provider supply or distance measures. One issue, for example, is that physician supply at the census-tract level may be an inappropriate marker for the accessibility of care because patients may cross tract boundaries for care. Distance measures may not take into account the availability of public transportation, which is likely to be an important determinant of the monetary costs and time required to get to a provider. The author notes the development of several new measures of spatial accessibility, all loosely based on “gravity decay” models, which may offer improved means (compared to studying simply physician supply or distance to providers) for understanding the implications of provider distribution for health and health care outcomes. In a 2004 study (Guagliardo et al., 2004), such a method was applied to pediatric providers in the District. Guagliardo, 2004, notes several challenges in developing estimates of spatial accessibility, such as inaccuracies or incompleteness of data, the importance of gathering data on an appropriate scale (i.e., studying census tracts or census tract aggregations when looking at within-city variability in accessibility), and the importance of having population and provider data for similar time periods.

Methods: Developing Health Indices

E.1 Developing Indices

To determine what variables to include in the SES, safety, and exercise indices, we used the Cronbach's alpha test. To calculate the SES index, safety index, and exercise index, we calculate the mean and standard deviation of the variable of interest across all census tracts in the District. For each census tract, we subtract the mean of the variable from the value for the census tract and then divide by the standard deviation. The result is a "z-score." If there are multiple variables in a domain, we aggregate z-scores over the variables in the domain. We then normalize the aggregate z-score (by comparing the z-score in the census tract to the maximum z-score across all census tracts) to obtain a variable that ranges from 0 to 100.

E.2 Census Tracts Omitted from Environmental Analysis

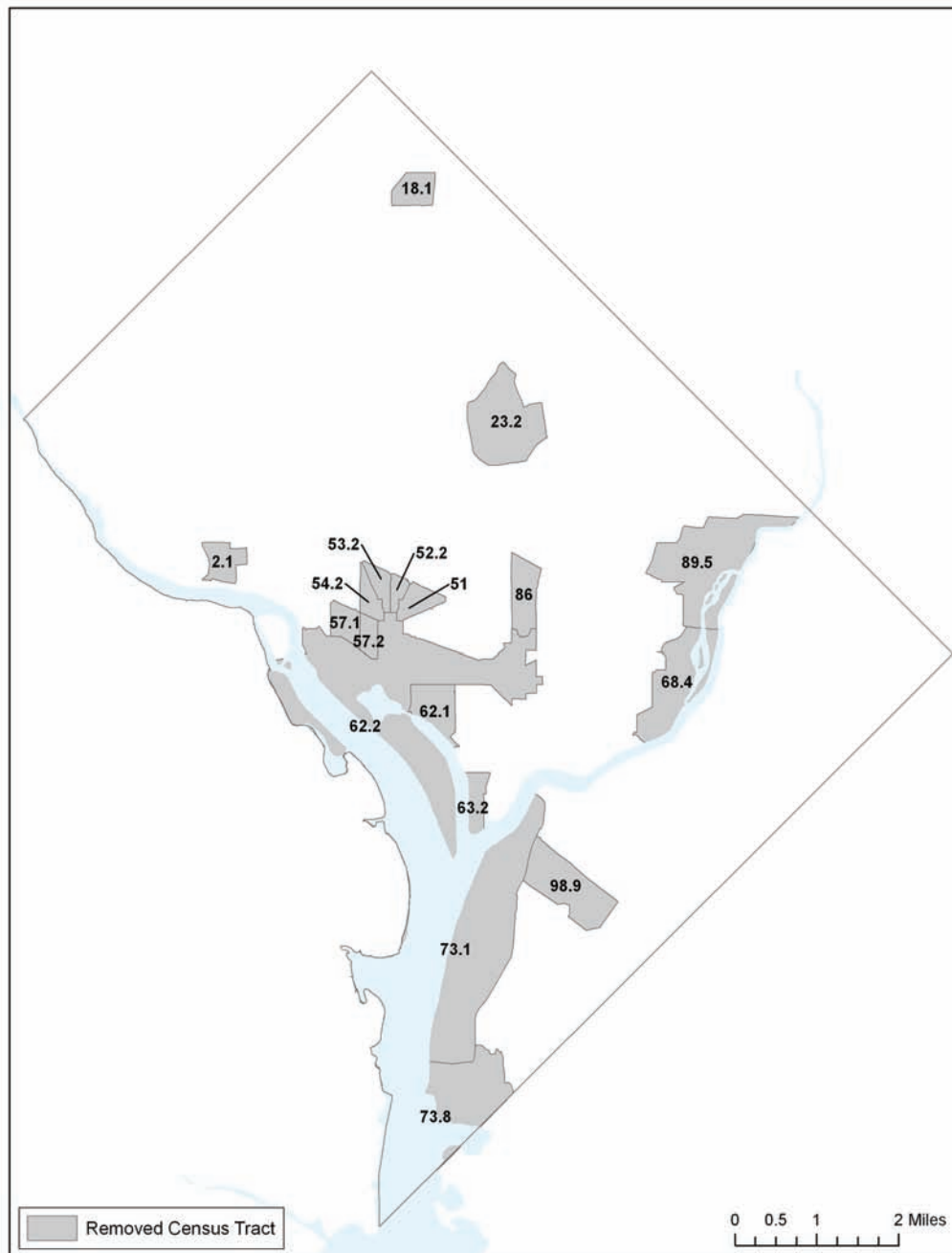
Table E.1 shows census tracts that we excluded from analysis because of the low number of noninstitutionalized youth living in those areas.

Table E.1
Excluded Census Tracts

Census Tract	Location
2.1	Georgetown University
18.1	Walter Reed
23.2	Airmen's
51	NE Whitehouse
52.2	NE Whitehouse
53.2	NW Whitehouse
54.2	NW Whitehouse
57.1	GWU
57.2	Old Executive Office Building
62.1	South of Mall
62.2	National Mall
63.2	Fort McNair
68.4	RFK Stadium/Prison
73.1	Bolling AFB, Anacostia Naval Station
73.8	WASA/D.C. Village
86	Union Station
89.5	National Arboretum
98.9	St Elizabeth's

The omitted tracts are shown in Figure E.1. Many of the tracts were omitted because they contain major geographical features, such as military bases and universities, that act as barriers to the youth population. Some of these barriers are shown below in Figure F.12.

Figure E.1
Omitted Census Tracts



E.3 Measuring Neighborhood Characteristics

Our sole measure of neighborhood deterioration is related to the extent of vacant housing. We derived measures of the extent of vacant housing in two ways. First, we used data from the 2000 Census on the percentage of housing units that are vacant. We experimented with extrapolating data from 2000 to 2009 as we did for the social environment variables; however, there were problems with the estimates related to the volatility in changes in vacant housing rates over time. To supplement and update this measure, we received 2008 data from the D.C. Department of Consumer and Regulatory Affairs with current address lists for vacant properties and divided the number of vacant units in the census tracts by the number of record lots in the census tract. Note that the numerator appears to include both residential and commercial units.

To supplement our measurement of residential deterioration, we sought and received data from the D.C. Housing Regulation Administration (HRA) of the Department of Consumer and Regulatory Affairs (DCRA) regarding violations of the D.C. housing code (“home abatements”) reported by tenants and neighbors. Common citations for home abatements include the presence of trash, lack of heat or hot water, electrical problems, and overgrown grass. However, we decided not to use these data because the measure reflects not only the level of deterioration but also the probability that a neighbor or tenant will report the problem. Further, no information was available regarding the severity of the issue. Another measurable aspect of neighborhood deterioration is the presence and extent of graffiti or other forms of vandalism (e.g., broken windows), but we were not able to obtain those data.

We used two variables to measure the extent to which local residents are living in overcrowded housing conditions (overcrowded and severely overcrowded); we were not able, however, to measure other characteristics of housing, such as the level of noise or extent of pest infestation. There are a variety of ways to define overcrowding (Blake, Kellerson, and Simic, 2007). We chose a measure that defines overcrowding as more than 1 person per habitable room and severe overcrowding as more than 1.5 persons per habitable room.

With regard to neighborhood safety, we measured reported incidents of violent and non-violent crime, as available through local, metropolitan police department statistics. However, because not all crime is reported, we supplemented the Metropolitan Police District measures of reported crime with two factors known to be strongly correlated with crime—residential mobility and the presence of take-away alcohol outlets. Appendix D describes the relationship between the latter and crime; residential instability is considered an important predictor of crime because transience among residents is related to greater social disorganization and fewer social controls (Sampson, Raudenbush, and Earls, 1997). We use a Census measure (extrapolated to 2009) of the percentage of residents who moved into the tract within the last five years to capture residential instability.

We obtained several measures of the District’s exercise environment. First, we developed a measure of the number of public community recreation centers per youth population in each census tract. We were not successful in obtaining a measure of capacity, such as the number of public dollars allocated (per capita among youth) to each recreation facility. We were also unable to quantify the availability of classes or programs through the recreation center or to ascertain facility attributes. Future measurement of such features is essential for understanding the children’s health environment more comprehensively. We measured the walkability and bike-ability of the local area with the number of miles of bike lanes and walking trails (per

mile of road). We also measured the availability of parks by using the number of square miles of parkland divided by the square miles of land in the tract. Finally, we have a measure of the extent of sidewalks—which is the number of linear miles of sidewalk divided by the number of linear miles of roads.

Many other aspects of the local environment are likely to influence physical activity among youth. For example, we sought information about the availability of different types of school-based facilities, such as swimming pools, tracks, football fields, and the like, and whether those facilities were available during school hours only or also after hours and on weekends. We also sought data on the availability and capacity of after-school sports activities. We were unsuccessful in obtaining these data. Finally, it would be useful to supplement the measures we have developed with others that indicate the location and availability of local swim clubs, skating rinks, and other such places.

We selected two measures of street connectivity among many different available measures (Dill, 2004). One measure is the “gamma” measure, which is the ratio of the number of links in a network (in our case, streets) to the maximum possible number of links between nodes (in our case, the number of street intersections). The other is the “alpha” measure, which is the ratio of the number of complete loops (blocks that can be traversed in a circle; also referred to as “circuits”) to the maximum possible number of loops. For both the gamma index and the alpha index, the index ranges from 0 to 1, with higher values representing more connectivity (and greater walk- and bike-ability). While we also sought to measure urban sprawl, which generally combines residential density, land use mix, and street connectivity, we were able to find such measures only at the metropolitan statistical area (MSA) level (e.g., all of D.C. and surrounding areas) and thus could not incorporate a census tract-level measure of sprawl.

We included one measure of the natural environment—the extent of tree cover, measured by the number of street trees per capita. Our data on environmental toxins is limited. Fortunately, we are able to capture a key variable—traffic flow—that is related to asthma and other respiratory disorders. We captured the percentage of the area of each census tract that is within 50 meters of a moderately heavily traveled road, within 100 meters of a road that is somewhat more heavily traveled, or within 150 meters of a very heavily traveled road. Unfortunately, while the D.C. Department of the Environment (DOE) had some data on radon and lead exposure, we decided not to use these data because they were derived from a nonrandom sample; data were based on residents’ interest in testing (radon) or evident symptoms of exposure (lead). Further, asbestos data were not available from DOE. In addition, we queried D.C. Public Schools about these data for school buildings and found that they were not readily available. We also explored data that the EPA maintains. However, with only five air-monitoring stations in the District, there was little variability across the city in air quality to include in our analyses. Similarly, data were insufficient for measuring variation in water quality across the city.

We lacked measures for certain domains at the neighborhood cluster or census-tract level. As noted, we do not have measures for social cohesion, trust, or social capital in localized areas. We also lack information on individuals’ *perceptions* of such neighborhood characteristics as safety, the availability of healthy food, and the availability of exercise places, all of which may differ from quantitative measures of these characteristics.

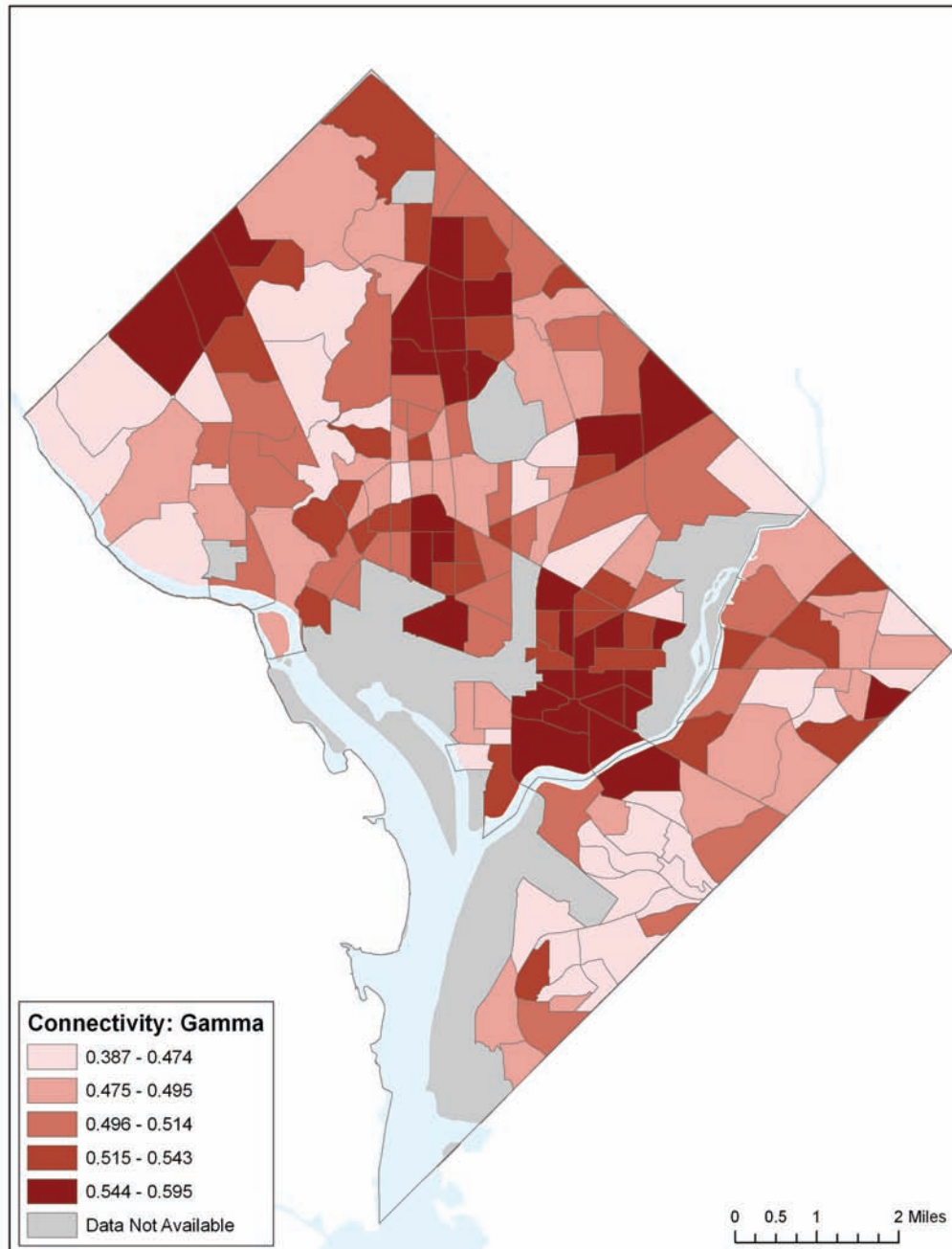
In some instances, we used multiple variables measuring a similar concept. In these cases, we developed a single index by aggregating the measures. We describe the methods for index creation in the Section E.1. We created an SES index using the percentage of households living in poverty, percentage of households receiving public assistance, percentage of female-headed households, the male unemployment rate, and the percentage of adults with less than a high school education. We also created a safety index using the rate of violent crime, rate of nonviolent crime, and presence of liquor stores.¹ A third index combines the availability of parks with the availability of bike lanes and walking trails.

We also constructed an overall “health environment” index. We normalized each index and/or each single variable (as the case may be) for each domain into a variable ranging from 0 to 100. We summed the normalized variables (safety index, exercise index, vacant housing, overcrowded housing, street connectivity, tree cover, air pollution) with the exception of the SES index. We then stratified census tracts into thirds of the distribution of the SES index and compared the health environment index among census tracts with similar socioeconomic characteristics. This approach allowed us to identify census tracts within each SES strata that have a poor overall health environment index and that are therefore likely to place youth at particular risk.

¹ Based on the results of statistical testing for the correlation among variables, we did not include mobility in the crime index or the number of public recreation facilities or sidewalks in the exercise environment index.

Health Environment Maps

Figure F.1
Street Connectivity by Census Tract (Gamma Measure)



NOTE: The Gamma measure is the ratio of the number of complete loops (blocks that can be traversed in a circle) to the maximum possible number of loops.

Figure F.2
Number of Vacant Lots Divided by the Total Number of Record Lots

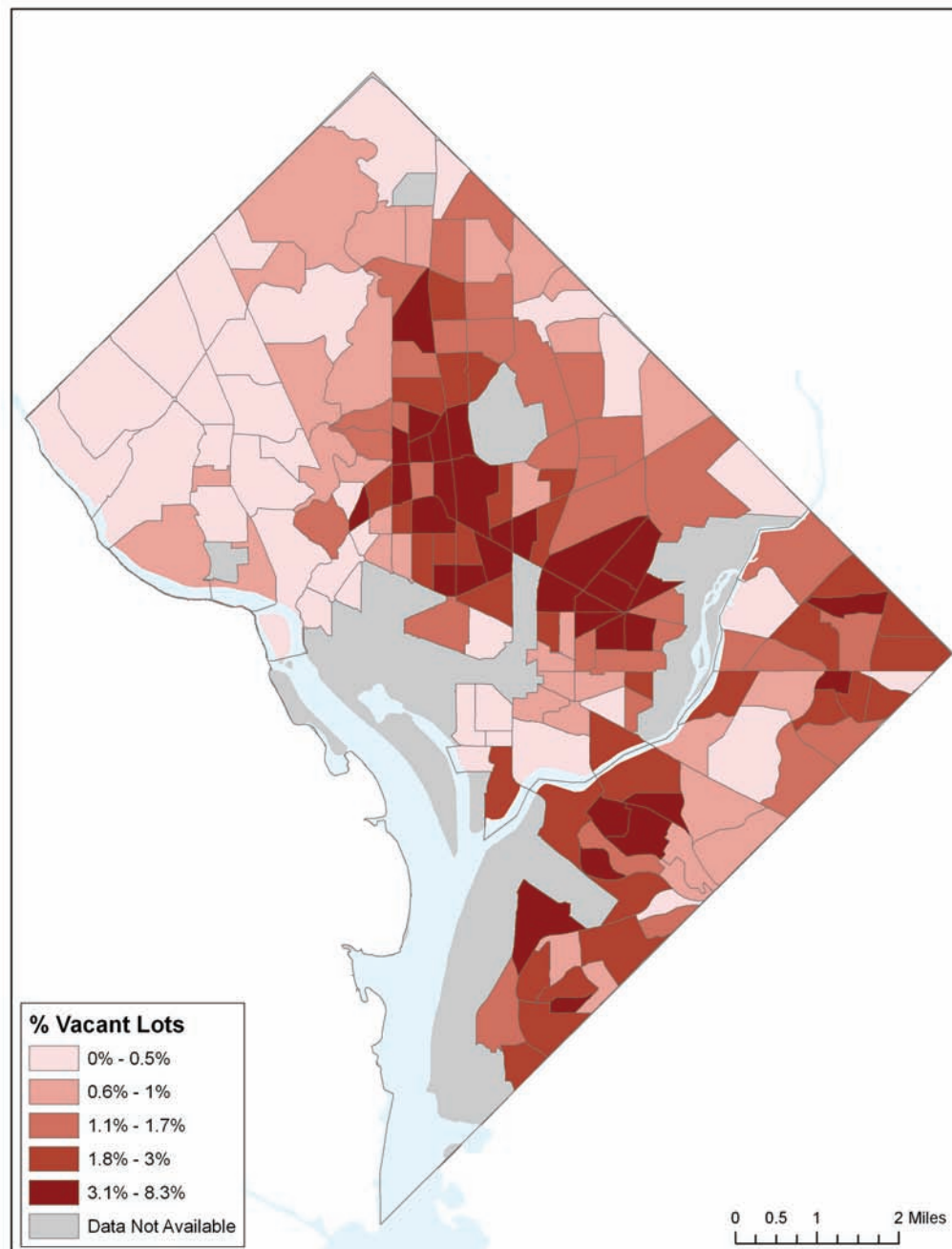


Figure F.3
Percentage of Households with More Than 1.01 People per Habitable Room

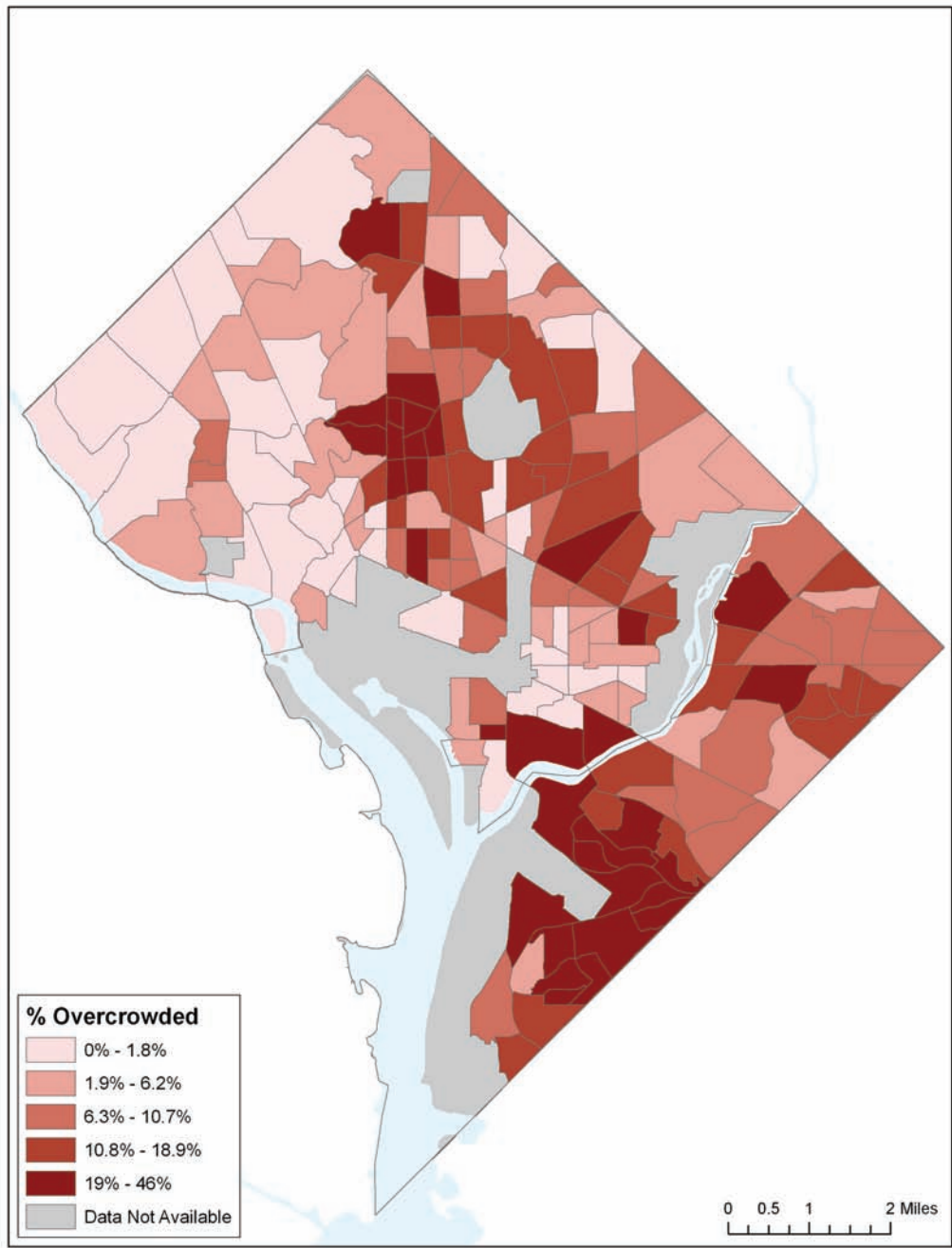


Figure F.4
Violent Crime per Capita

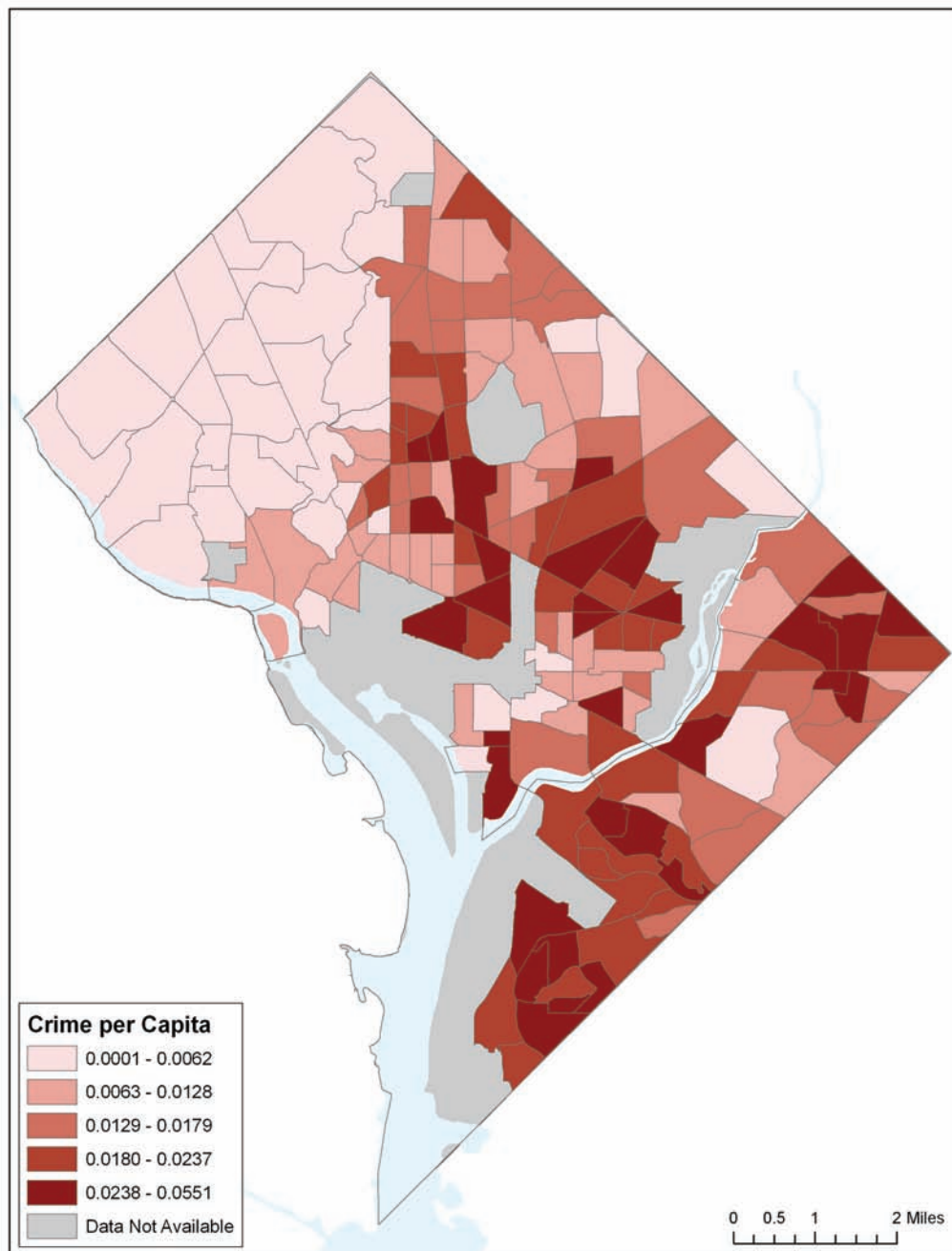


Figure F.5
Nonviolent Crime per Capita

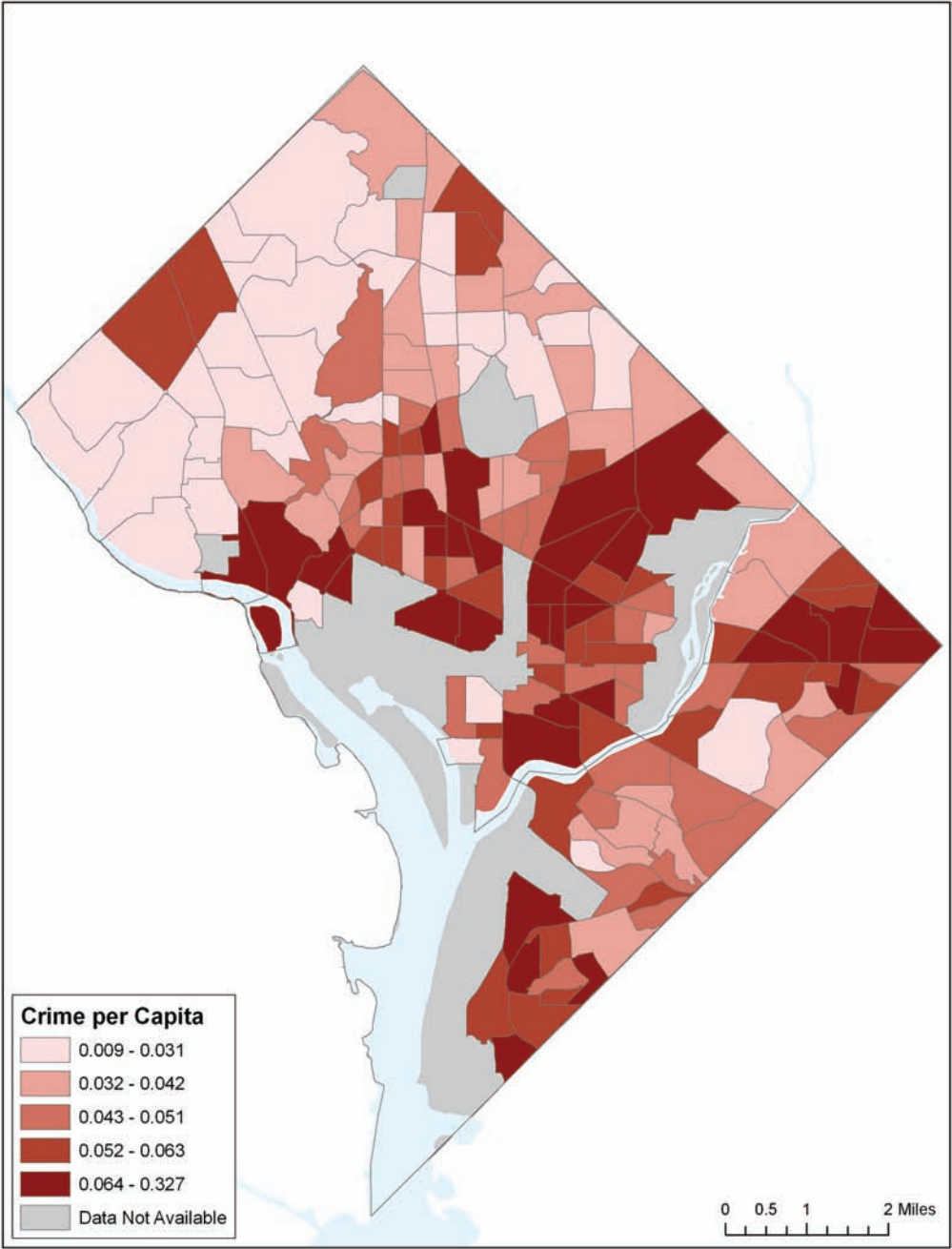


Figure F.6
Location of Take-Away Liquor Stores

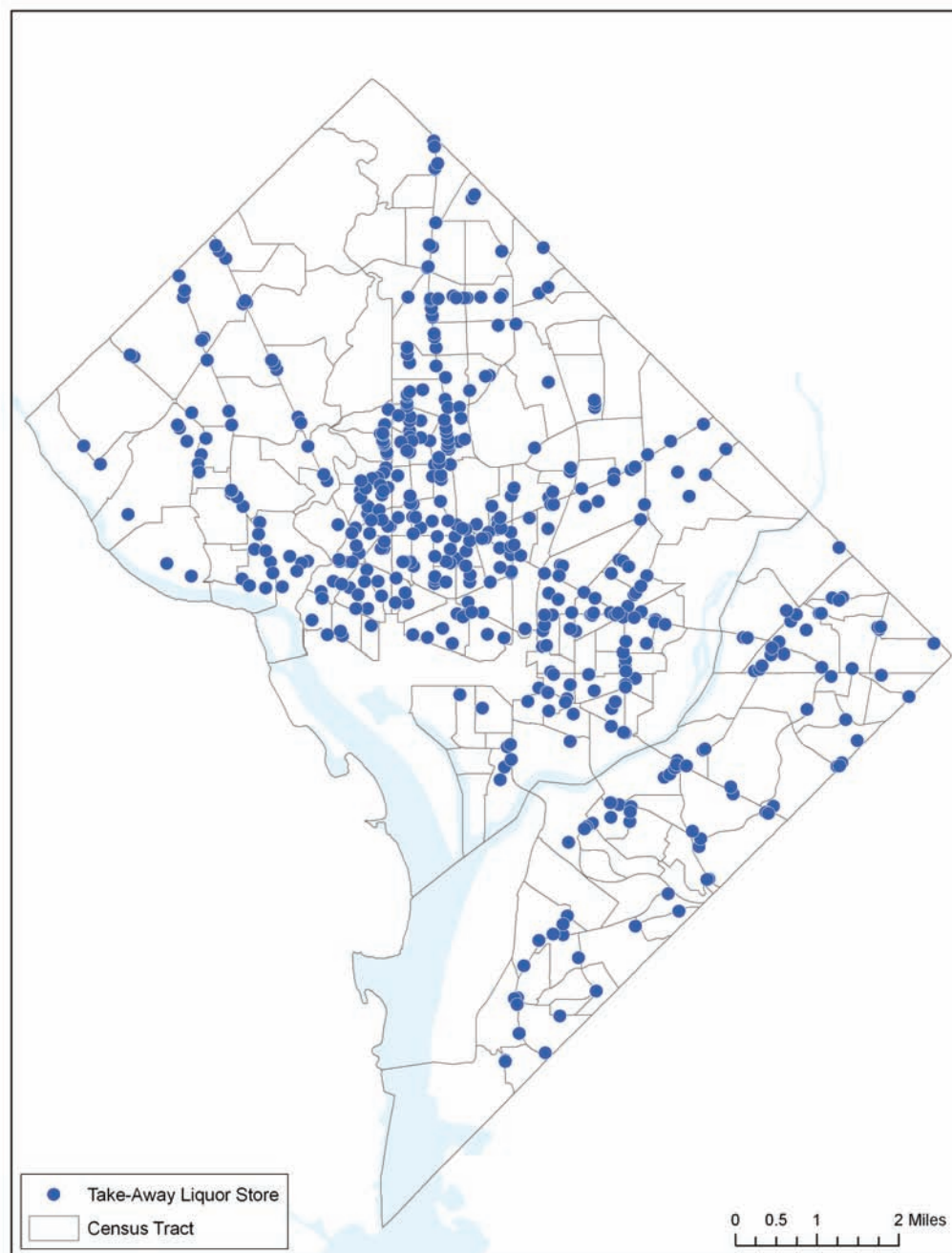


Figure F.7
Parkland

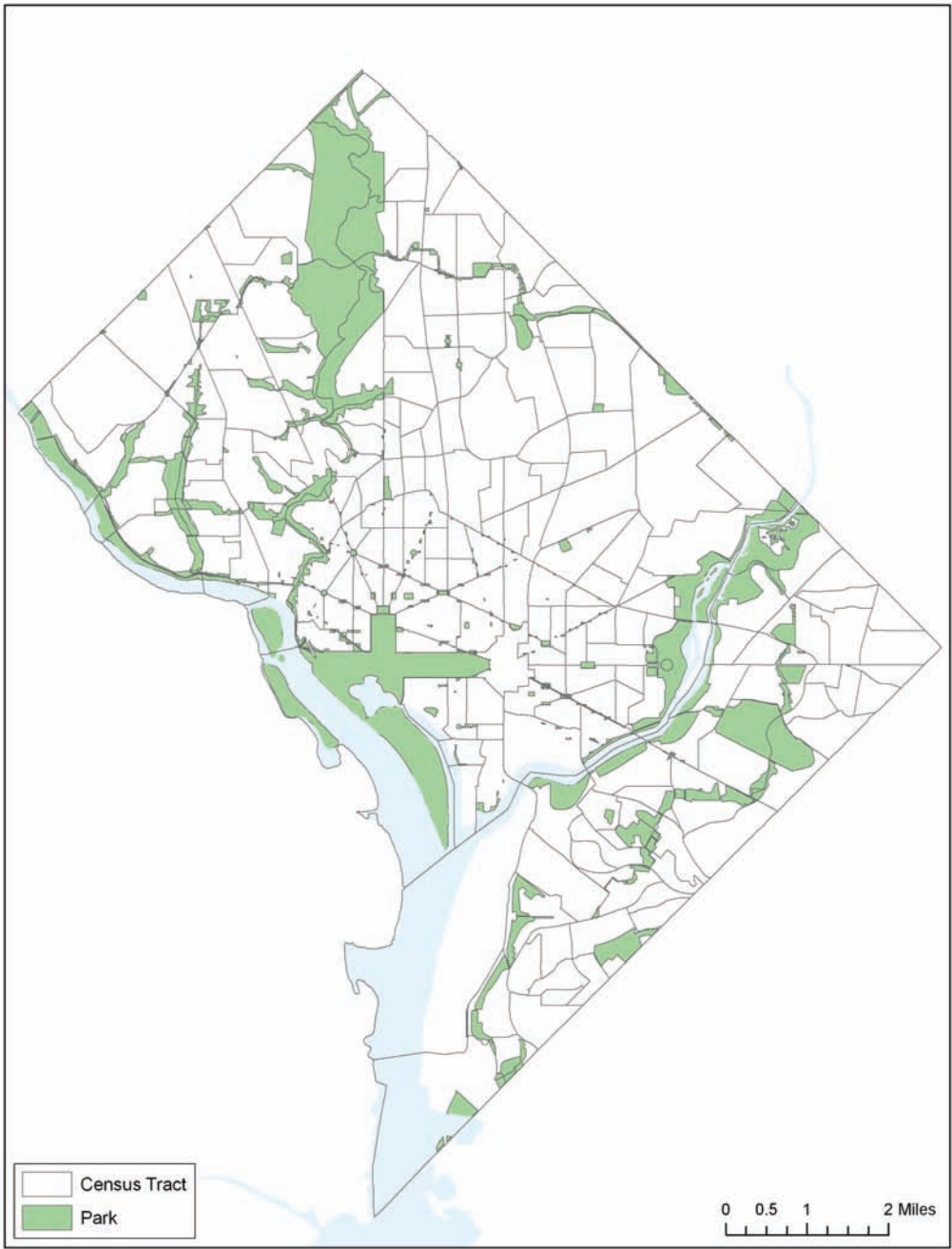


Figure F.8
Areas with High Average Annual Daily Traffic

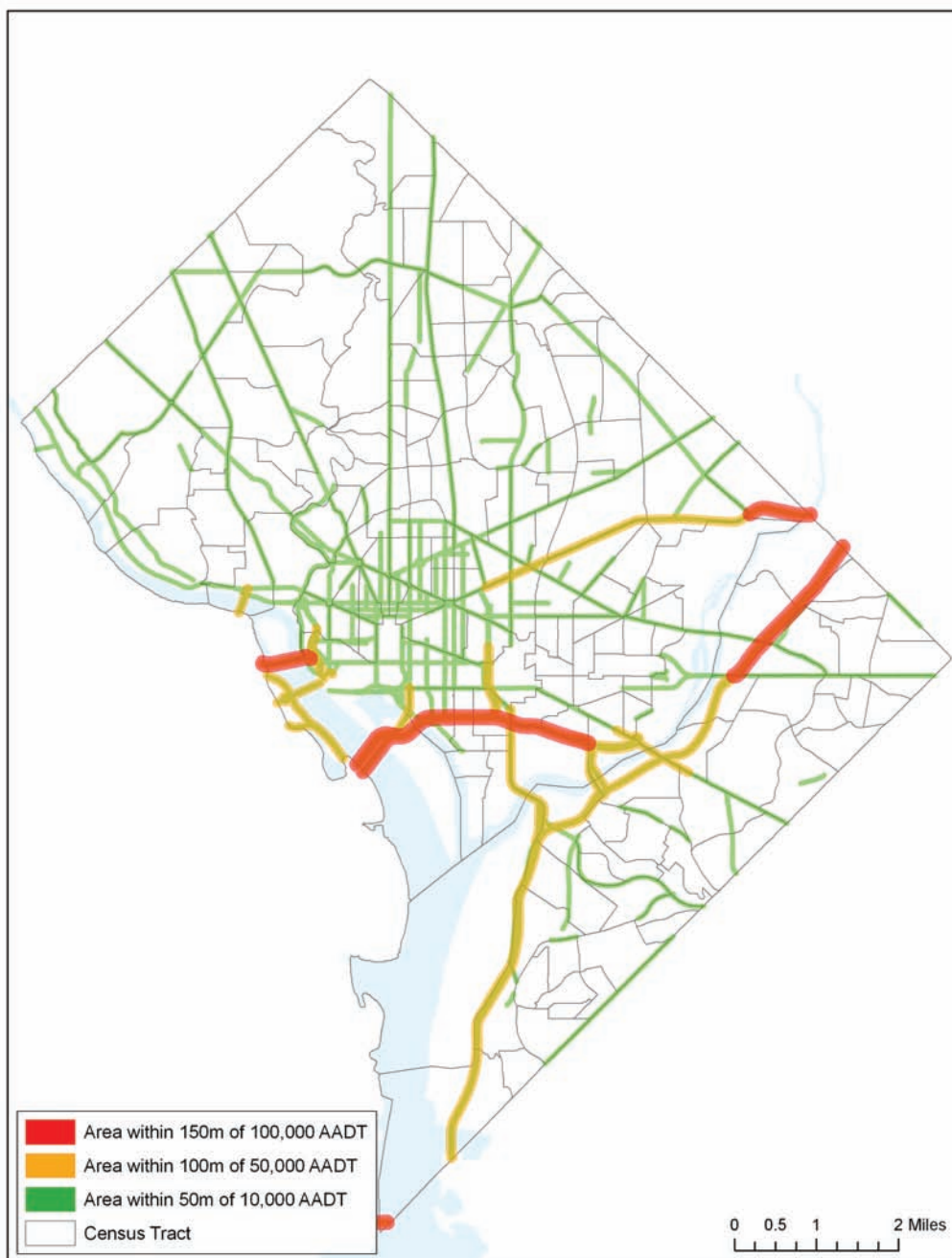


Figure F.9
Location of Major Grocery Stores

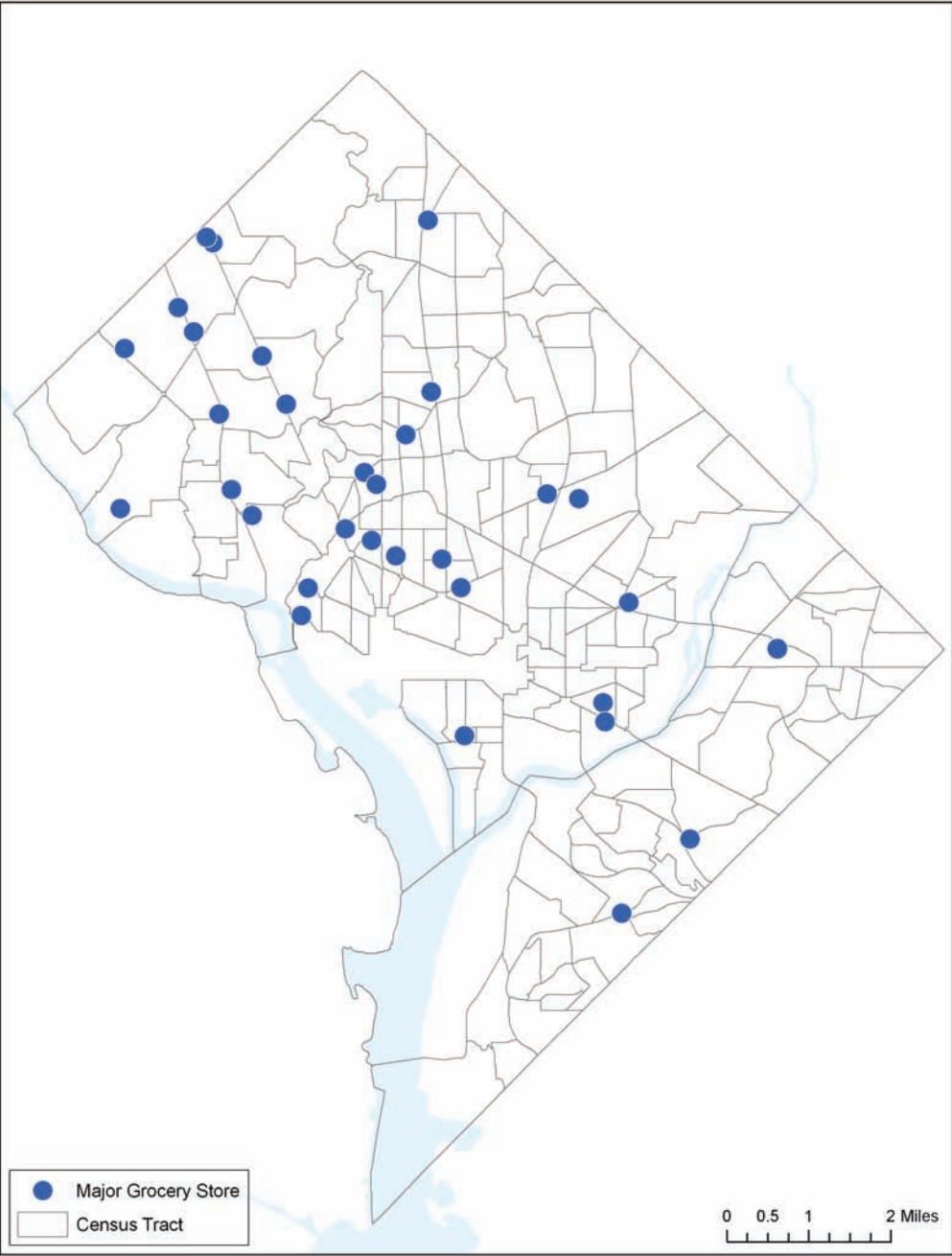


Figure F.10
Location of Major Fast-Food Outlets

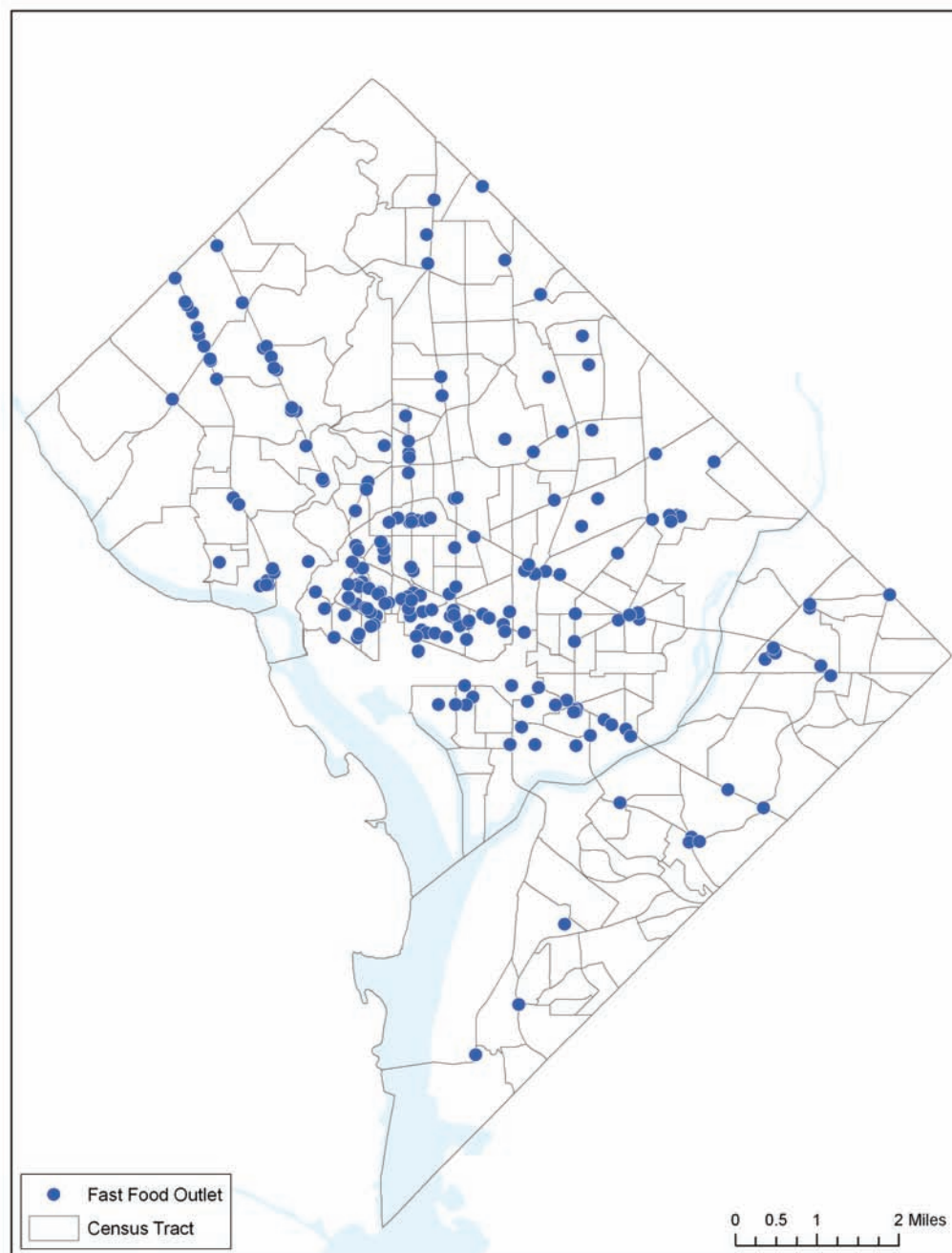


Figure F.11
Zoning

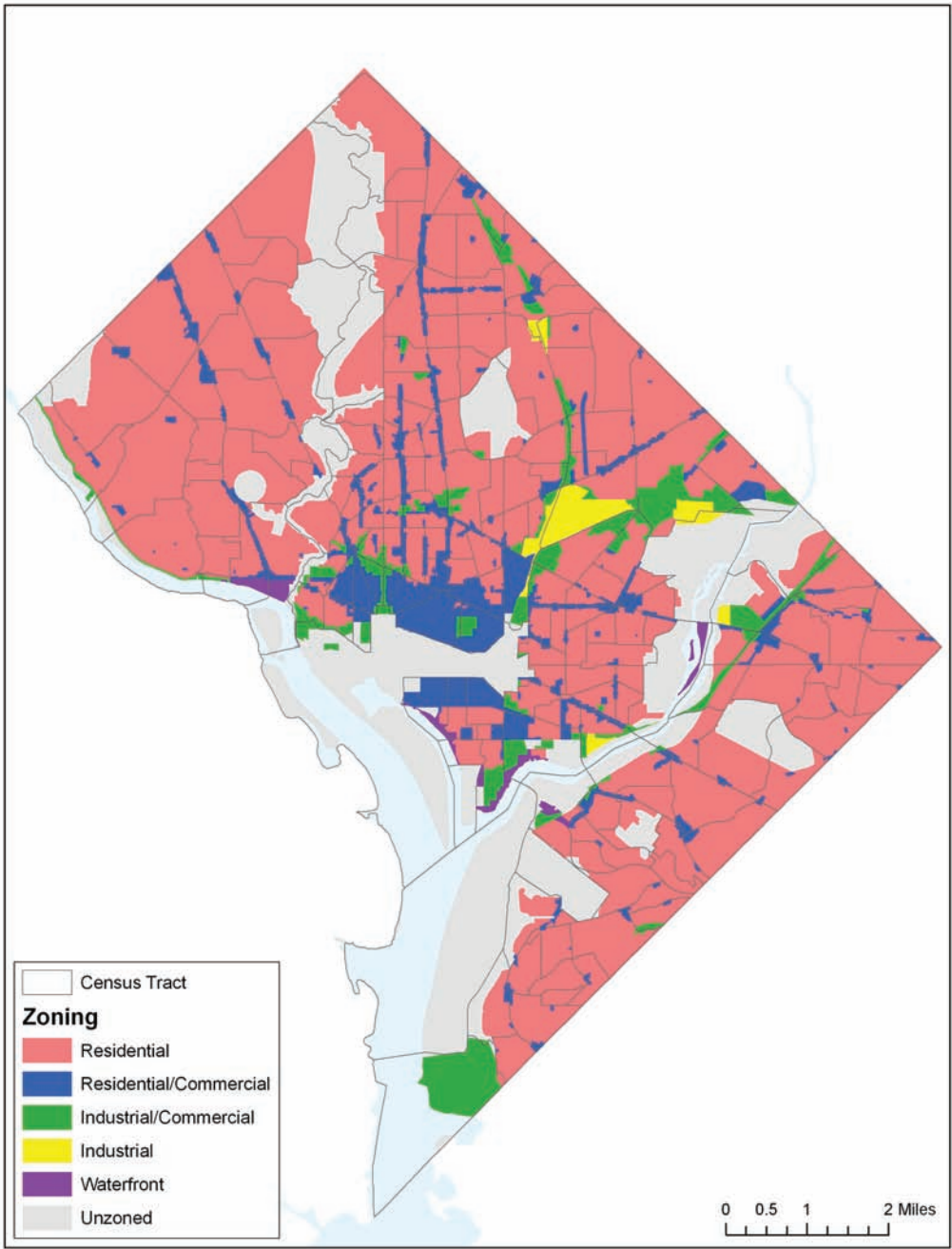
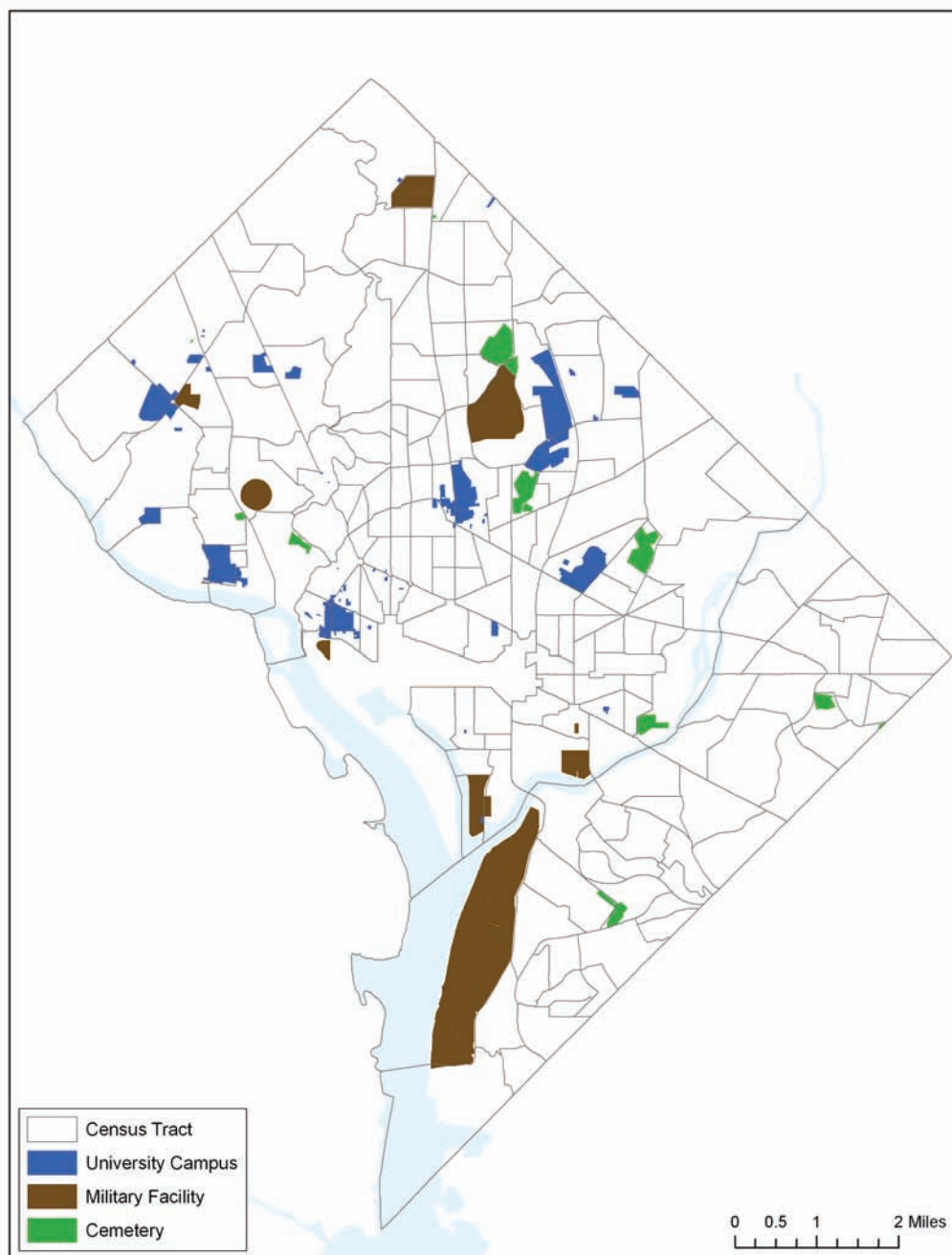


Figure F.12
Major Youth Population Barriers



Analyses of Claims and Hospital Discharge Data

G.1 Identifying Types of Care

Our general approach was to identify different types of utilization based on CPT codes. Some of the data sources used have additional information, such as “location” of care, which we do not rely on heavily.

- We identified office-based visits using CPT codes. We included the following CPT codes in our analysis: 99201–99205, 99211–99215, 99241–99245, 99381–99385, 99391–99395, 99401–99404, 99411, 99412, 99429, and 99432.
- We identified well-child visits as office visits that have one of the following CPT codes or an ICD9 code that indicates that an immunization occurred. The CPT codes are 99381–99385, 99391–99395, 99401–99404, 99411, 99412, 99429, and 99432.
- We identified ED visits using the following CPT codes: 99281–99285, 99291, 99292, and 99217–99220. We codified observation stays as ED visits, although they may occur in the ED or the inpatient hospital.
- We derived a measure of whether there was any home health care during a month using the following CPT codes to identify home health care: 99341, 99345, and 99347–99350. The following alpha-numeric codes are also considered indicative of a home health care visit: S9122, S9123, S9124, T1000, T1001, T1030, and T1031.
- We measured inpatient stays as claims that have one of the following CPT codes: 99238 and 99239. Although in principle all claims should have a discharge CPT code, not all do, so we looked additionally for these CPT codes: 99221–99223, 99231–99233, 99251–99255, and 99293–99296. We also included inpatient stays for evaluation and management for which admission and discharge were on the same date: 99234, 99235, and 99236.
- We also analyzed CPT codes associated with case management, although they did not often appear: 99361, 99362, 99371, and 99373.
- Our final goal was to measure mental health care. We looked for office-based, home-based, and hospital-based care. We measured office-based mental health care using these CPT codes: 90801–90815, 90841–90847, 90849, 90853, 90857, 90862, 90865, 90835, 90870, 90871, 90875, 90876, 90880, 90882, 90885, 90887, 90889, and 90899. Home-based mental health care includes the following CPT and alpha-numeric codes: M0064, H2020, H0037, and 99510. Hospital-based mental health care (inpatient, partial hospital, or residential) is defined as CPT codes 90816–90829.

G.2 Identifying Conditions

We used primarily codes from the AHRQ Clinical Classification Software (CCS) to identify high-priority conditions in the claims data; in some instances we identified them using ICD9 codes.

Table G.1
High-Priority Conditions and Associated CCS Codes

Condition	CCS Code
ADHD	8.3
Autism	299.0 (ICD9)
Mental health	5
Obesity	3.11.2
Diabetes	3.2–3.3
Seizure disorder	6.4
Sickle cell anemia	4.1.2
HIV/AIDS	1.3.1

We used three-digit ICD9 codes as shown in Table G.2 to identify qualifying conditions in the HSCSN data.

Table G.2
Qualifying Diagnoses in HSCSN Data and Associated Three-Digit ICD9 Codes

Condition	ICD9 Code (First 3 Digits)
Hyperkinetic	314
Developmental delay	315
Mental retardation	319
Cerebral palsy	343
Pervasive developmental disorder (including autism and psychosis)	299
Emotional disturbance	313
Episodic mood disorders	296
Asthma	493
Mild mental retardation	317
Healthy child (foundling)	V20
Hearing loss	389
Low birthweight/preterm	765
Hemolytic anemia (including sickle cell)	282
Chromosomal anomaly (including Down's syndrome)	758
General symptoms (including syncope and convulsions)	780
Conduct disorder	312
HIV/AIDS	42
Depressive disorder	311
Adjustment disorder	309
Speech disturbance	784
Other mental retardation	318
Epilepsy/recurrent seizure	345
Congenital anomaly, nervous system	742

G.3 Data Basics

G.3.1 Medicaid and Alliance Managed Care Data

The Medicaid managed care data contains information from three health plans that serve District Medicaid and Alliance enrollees in 2006 (Health Right, Chartered, and Amerigroup). The data include 51,679 Medicaid managed care enrollees younger than age 2 and 3,320 youth Alliance enrollees who were enrolled a full 12 months.

G.3.2 HSCSN Claims Data

The HSCSN data contain information on 3,499 enrollees who were observed for at least 12 months (continuous eligibility) and in some cases 24 months during 2007 and 2008. We pooled observations from both years for the same individual, resulting in a total 5,967 observations of 12-month periods.

G.3.3 FFS Medicaid Data

The fee-for-service (FFS) Medicaid data contain information for 2007. A key limitation is that the data do not include information for FFS enrollees who did not use care during the year. Thus, our analyses include *only* the subset of children who used some care during 2007. The data include 5,957 children who were enrolled for a full 12 months, are younger than 21, and who used care at some point during the year.

G.3.4 Consistency Checks: Children's National and MCO/HSCSN/FFS Data

One way we confirmed the validity of the claims data sets was to check statistics regarding heavy ED usage across data sets. We compared figures from the claims data with data from the Children's National claims data. Table G.3 profiles the intensity of use among youth patients who have at least one visit to the Children's National ED. The vast majority of children have only one or two such visits (87 percent) but approximately 13 percent of children have three or more ED visits. This figure is consistent with findings from the other claims data, where we observe frequent ED use (three or more visits/year) among 13 percent of children who have an ED visit in the general managed care plans for Medicaid and Alliance, 22 percent among children who have at least one ED visit in HSCSN, and 24 percent among FFS Medicaid enrollees who have at least on ED visit.

Table G.3
Intensity of Children's National ED Use Among Children
with at Least One Children's National ED Visit, 2007–2008

Number of ED visits	Percent
Light use (1–2 visits)	87.4
Heavy use (3–4 visits)	10.0
Very heavy use (5+ visits)	2.6
Total	100.0

We also examined heavy ED use among Children's National patients by age and patient zip code of residence. Among children who had at least one ED visit, very young children (ages 0–1) were most likely to have heavy ED use (22 percent). This, too, is consistent with our findings from the other data sources.

G.3.5 DCHA Data: ACS Rates

Standard, well-validated methods exist for classifying inpatient hospitalizations and ED visits into those that are ACS or not. These methods, which were first established by Billings, Pankh, and Mijanovich, 2000, are used by the U.S. Agency for Healthcare Research and Quality and by several states to monitor the progress of their health care system (Weinick and Billings, 2004). Examples of ACS-IP admissions include diagnoses of asthma, dehydration, and hypertension, among others. Non-ACS hospitalizations consist of a mixture of those that are for urgent or emergent conditions, such as heart attacks or major trauma, obstetrical care, medical treatments, and surgeries.

Algorithms for ED visits first classify them into four groups: (1) nonemergent (i.e., did not require immediate medical care); (2) emergent/primary care treatable (needed medical care urgently but such care could have been provided in a primary care setting); (3) emergent but preventable (such visits could have been prevented if effective primary care had been available); and (4) emergent and not preventable (care is needed urgently and could not be provided in a primary care setting). The first three categories of visits are considered ACS. Examples of diagnoses associated with ACS-ED visits include asthma, chronic obstructive pulmonary disease (COPD), congestive heart failure (CHF), and diabetes, among others. In contrast to the ACS-IP algorithm, which classifies ACS and non-ACS hospitalizations using diagnosis, the ACS-ED algorithm takes each diagnosis code and assigns a probability that the visit was in one of the categories. In the ACS-ED analyses, we considered only ED visits that did not result in a hospital admission. We did not consider whether ED visits associated with inpatient admissions were potentially avoidable. (Thus, the calculated ACS-ED rates are likely higher than they would be if all ED visits were included.)

As noted, ACS rates have been used as an indirect measure of the functioning of the primary care system, including the accessibility and effectiveness of primary care. Conceptually, ACS rates may be influenced by a range of factors related to primary care, including (see, e.g., Institute of Medicine, 1993)

- the availability of primary care and hospital-based care
- the price that patients pay for hospital care compared to the price they would pay for office-based care (i.e., the out of pocket costs of care)
- “nonpecuniary” or indirect costs of obtaining hospital care relative to costs for obtaining primary care (such as the costs of transportation, the time spent traveling to and from the location of care, and time spent waiting to be seen)
- individuals’ preference for hospital care compared to primary care
- the quality of primary care and hospital-based care
- the underlying burden of illness in the community
- perceptions of access, cost, and quality—which may or may not reflect true levels of each.

Various studies have confirmed the link between aspects of the availability and effectiveness of primary care and ACS rates. For example, Bindman et al, 1995, and Ansari, Laditka, and Laditka, 2006, provide evidence of an inverse relationship between self-rated access to health care and ACS rates in urban areas (the better self-rated access is, the lower ACS rates are). Results from Ansari, Laditka, and Laditka, 2006, support the hypothesis of a negative relationship between ACS rates and both primary care visits and the supply of primary care

physicians. Further, Epstein, 2001, showed that populations in medically underserved areas (MUAs) served by a Federally Qualified Health Center had significantly lower avoidable hospitalization rates than did other MUA populations. In addition, Laditka, Laditka, and Probst, 2005, found that physician supply is inversely associated with ACS rates at the county level and that physician supply had a greater effect than other variables. However, not all studies have found a robust inverse relationship between physician supply and ACS rates. For example, Krakauer et al., 1996, found this inverse association only for areas with lower to moderate levels of physician supply.

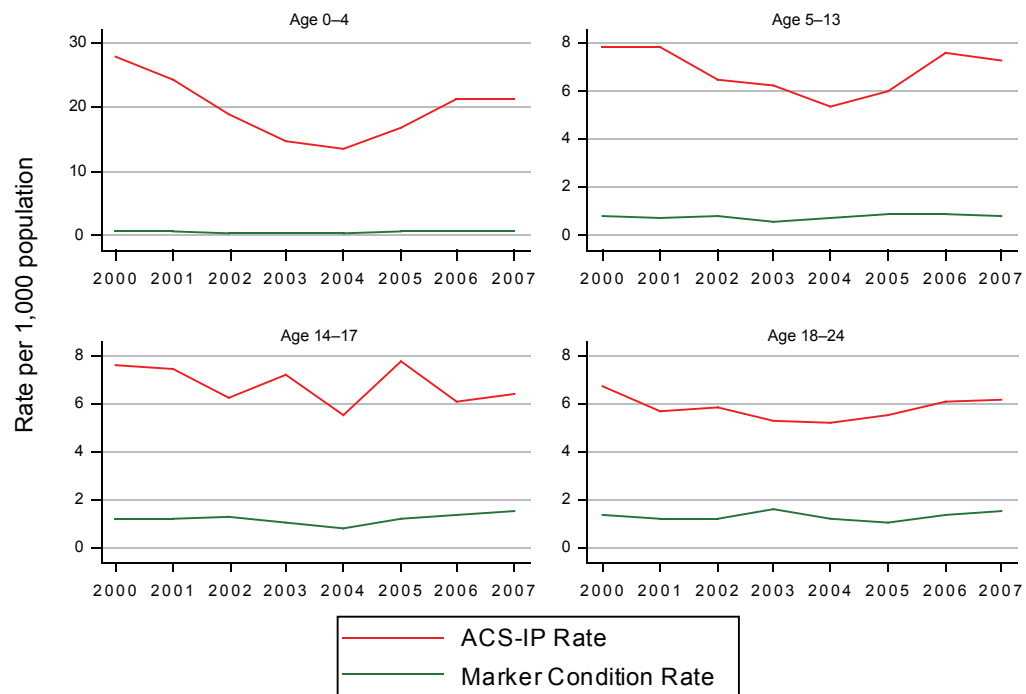
Beyond physician supply and self-rated access to care, studies confirm that ACS rates are higher in areas with lower levels of income and education, which may reflect different preferences for primary and hospital care compared to other population groups; different costs—in terms of money, time, or convenience—associated with primary and hospital care for groups with lower income or education (i.e., primary care may involve long waiting times for an appointment); differences in the quality of care; and/or different perceptions of availability, cost, or quality. In addition, some evidence suggests that the supply of hospitals and specialists in an area may also contribute to hospitalization rates (Dartmouth Atlas, 2007).

Parsing out the influence of each contributing factor on the ACS hospitalization level in an area is a challenge. Some researchers have conducted regression analyses of the effects of socioeconomic and health care market characteristics on ACS rates (Laditka, Laditka, and Probst, 2005). An alternative approach is to survey those who experience an ACS hospitalization about the underlying factors. Those data suggest that the perceptions of patients and providers differ. Flores et al., 2003, found that patients attributed about a third of ACS hospitalizations to themselves—including failure to obtain and keep on hand an adequate supply of medication, failure to take a child to a follow-up appointment or contact a primary care provider in a timely manner—and about 48 percent to providers (mainly quality-of-care issues). At the same time, providers attributed 71 percent of ACS hospitalizations to patient factors and 18 percent to provider factors, primarily failing to adequately educate their patients. Both patient and provider factors could be related to the availability of care—providers might provide lower quality of care if they are overwhelmed with too many patients while patients might not get a refill or have a follow-up appointment if obtaining an appointment is difficult.

Thus, given the range of factors that influence ACS rates, policy levers to reduce ACS rates could include interventions to reduce the burden of chronic disease or to improve self-management, changes that would increase the availability of primary care and/or reduce the costs associated with primary care (including direct out-of-pocket costs for health care services as well as transportation costs or time spent waiting for an appointment), and changes designed to alter misperceptions of cost, quality, or accessibility of care. How much to use one policy lever over another depends on the relative role of the factor on ACS rates in the area.

Figure G.1 provides a comparison of ACS-IP rates to marker conditions.

Figure G.1
ACS-IP Hospitalization Rates Compared to Marker Condition Hospitalization Rates, 2000–2007



Focus Group Methodology and Demographic Characteristics

H.1 Methods

H.1.1 Parent Focus Groups

The parent focus groups, which included a total of 70 residents, were intended to provide a snapshot of the pediatric health care experiences of a sample of community residents and to offer opportunities for parents to share their ideas and recommendations for how to strengthen the District's health services for children. The focus groups were conducted with residents of Wards 1, 4, 5, 6, 7, and 8. We included these wards because of their significant pediatric health and health care needs, identified through our other data analyses. We also conducted one group made up solely of foster parents from across the city, which allowed for in-depth analyses of the specific health needs of these youth. Time and resource constraints precluded additional groups in other areas of the District.

We worked with community leaders in each of the wards to assist us with focus group recruitment. We provided leaders with the objectives for the groups as well as a sampling plan to ensure that we had adequate representation by age of child, insurance status, and health needs. We included participants who had children with chronic disease experience (e.g., asthma, diabetes, sickle cell anemia), which provided insight into issues particularly related to specialty care. In addition, we divided the groups by age of child (0–5, 6–12, and 13–18) to allow for focused discussion of child health needs by chronological age and stage of development.

H.1.2 Adolescent Focus Groups

We conducted two focus groups with adolescents ($n = 17$ participants) to obtain their direct perspectives on youth health issues, to understand how and why adolescents access services, and to identify resources needed in their communities to improve youth health. We worked with two youth-serving organizations to identify youth from across the city.

H.1.3 Provider Focus Groups

The provider focus groups and interviews included 43 providers and were intended to obtain information about barriers to health care service delivery from the perspective of the caregiver. We asked providers to give input on what policy options would be most helpful to improving health care for children in the District.

We worked with contacts at District academic centers, hospitals, community-based clinics, and at the school-based mental health and dental programs to help us with recruitment for the provider focus groups. In cases in which providers were unable to attend a scheduled focus group, we also conducted phone interviews. We conducted a total of seven provider focus

groups: three with providers who practiced in primarily academic/hospital settings, three with providers who practiced in community clinic settings, and one with school mental health providers. We also conducted three individual interviews. One of our groups focused on specialist services. This focus group represented a spectrum of primary care providers, adolescent medicine providers, providers from a number of specialty services, and school-based mental and dental health providers. We also had providers who practiced in wards across the city.

H.1.4 Interview Protocol

We employed a semistructured interview protocol, which was divided into two sections: (1) discussion of health issues and difficulties accessing health services; and (2) discussion of neighborhood factors associated with poor child health. In each section, we presented a preliminary set of data (generally simple graphs) to motivate discussion about child health issues in the city. In addition, we asked each group to brainstorm about strategies (policy and programmatic) to address the health services and health environment issues identified in the group. Group members also prioritized these recommendations based on need, relative impact, and ease of implementation. In general, we followed similar protocols for parents, teens, and providers. We spent slightly more time on the health environment in the parent and teen groups, and more time on health service issues in the provider group. However, we covered both topics in all groups to allow for analysis of common themes across stakeholder group.

Each focus group lasted 1–1.5 hours. Notes were taken on a laptop computer, and the group discussions were audio recorded. The notes were enhanced based on these recordings, with attention to identifying participant quotes and clarifying recommendations and the accuracy of statements.

H.1.5 Data Analysis

The interview notes were reviewed by the three members of the study team. We first completed and edited all interview notes with the audio recordings and abstracted information on each study objective. We created a coding scheme to organize data into relevant domains, and conducted an analysis of a sample of notes to ensure that our coding scheme effectively captured all theme areas. We summarized our data first by domain, further analyzing it by relevant themes and ensuring that themes were supported by multiple respondents and not simply one participant.

H.2 Demographic Characteristics

Table H.1
Parent Group Characteristics (n = 70)

	Mean (range), %
Parent/caregiver	
Age	37 (17–69)
Gender	
Female	86
Male	14
Race/ethnicity	
Black/African American	60
Hispanic/Latino	40
Family characteristics	
Average number of children	2
Average age of children across households	11
Insurance	
D.C. Alliance	12
Medicaid	54
Private	16
Self-pay	7
Other	11
Percent having children with chronic health condition	26

Table H.2
Teen Group Characteristics (n = 17)

	Mean (range), %
Age	16 (13–19)
Gender	
Female	41
Male	59
Race/ethnicity	
Black/African American	63
Hispanic/Latino	9
White	28
Insurance	
Medicaid	22
Private	28
Self-pay	6
Other	17
Don't know	27
Percent having children with chronic health condition	25

Table H.3
Provider Group Characteristics (n = 43)

	Mean, %
Age	38
Gender ^a	
Female	72
Male	29
Race/ethnicity	
Black/African American	38
Hispanic/Latino	2
White	43
Asian	5
Missing	12
Average years in practice	9.2
Specialty	
Adolescent medicine	19
Family practice	9.5
General pediatrics	19
Mental health (social work/psychology)	24
Other	16.6
No response/unknown	12
Insurance accepted	
Medicaid	25
Private	21
Alliance	21
Uninsured	17
Medicare	13

^a Percentages do not sum to 100 percent because of rounding.

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